OPERATING MANUAL

AVM 50

AVM 20-HD AVM 30-HD

ANTHEM®

UPDATES: www.anthemAV.com

SOFTWARE VERSION 1.1x

SONIC FRONTIERS INTERNATIONAL

BREAKING THE SOUND BARRIER™

SAFETY PRECAUTIONS

READ THIS SECTION CAREFULLY BEFORE PROCEEDING!

The lightning flash with arrowpoint within an equilateral triangle warns of the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle warns users of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE THE FUSE ONLY WITH THE SAME AMPERAGE AND VOLTAGE TYPE. REFER REPLACEMENT TO QUALIFIED SERVICE PERSONNEL.

WARNING: UNIT MAY BECOME HOT. ALWAYS PROVIDE ADEQUATE VENTILATION TO ALLOW FOR COOLING. DO NOT PLACE NEAR A HEAT SOURCE, OR IN SPACES THAT CAN RESTRICT VENTILATION.

IMPORTANT SAFETY INSTRUCTIONS

1. **Read Instructions** – All the safety and operating instructions should be read before the product is operated.
2. **Retain Instructions** – The safety and operating instructions should be retained for future reference.
3. **Heed Warnings** – All warnings on the product and in the operating instructions should be adhered to.
4. **Follow Instructions** – All operating and use instructions should be followed.
5. **Cleaning** – Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp, soft cloth for cleaning.
6. **Water and Moisture** – Do not use this product near water – for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.
7. **Accessories** – Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

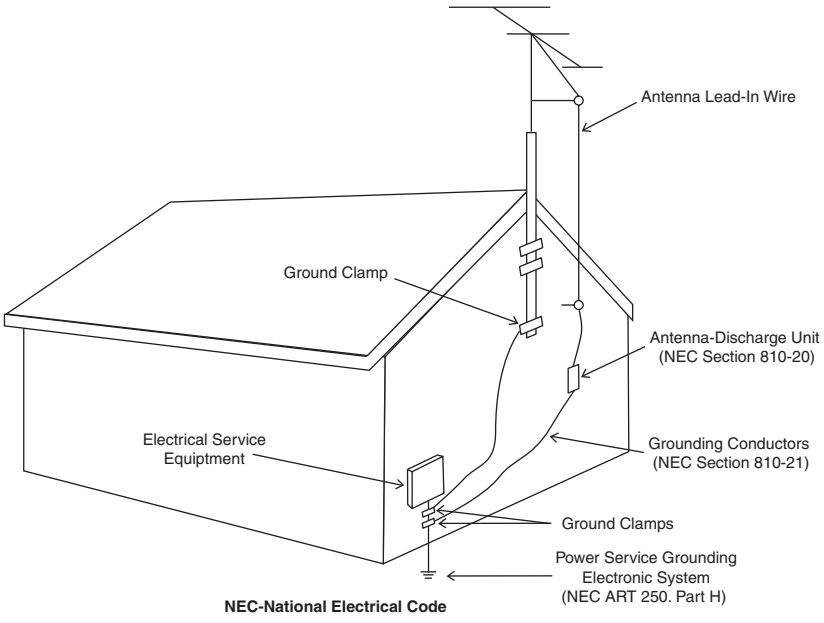
8. **Ventilation** – Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

9. **Power Sources** – This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

10. **Grounding and Polarization** – This product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

11. **Power-cord Protection** – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

12. **Outdoor Antenna Grounding** – If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to the proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna-discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.



13. **Lightning** – For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable systems. This will prevent damage to the product due to lightning and power-line surges.

14. **Power Lines** – An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

15. **Overloading** – Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.

16. **Object and Liquid Entry** – Never push objects of any kind through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on this product. This product shall not be exposed to dripping or splashing. No objects filled with liquids such as vases shall be placed on this product.

17. **Servicing** – Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

18. **Damage Requiring Service** – Unplug this product from the wall outlet and refer servicing to qualified personnel under the following conditions:
    - When power-supply cord or plug is damaged.
    - If liquid has been spilled, or objects have fallen into the product.
    - If the product has been exposed to rain or water.
    - If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will require extensive work by a qualified technician to restore the product to its normal operation.
    - If the product has been dropped or damaged in any way.
    - If the product exhibits a distinct change in performance – this indicates a need for service.

19. **Replacement Parts** – When replacement parts are required, be sure the technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

20. **Safety Check** – Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

21. **Heat** – The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

RECYCLING AND REUSE GUIDELINES (Europe)
In accordance with the European Union WEEE (Waste Electrical and Electronic Equipment) directive effective August 13, 2005, we would like to notify you that this product may contain regulated materials which, upon disposal, require special reuse and recycling processing. For this reason Paradigm Electronics Inc. (the manufacturer of Paradigm speakers and Anthem electronic products) has arranged with its distributors in European Union member nations to collect and recycle this product at no cost to you. To find your local distributor please contact the dealer from whom you purchased this product or go to our website at www.paradigm.com.

Please note that only the product falls under the WEEE directive. When disposing of packaging and other shipping material we encourage you to recycle through the normal channels.

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1. INTRODUCTION

Thank you for purchasing the Anthem AVM 50.

The AVM 50 is a cutting-edge home theater audio and video processor with independent multizone capabilities and FM/AM tuner. Anthem products are engineered to recreate the passion of a live musical performance and thrill of the very best movie theaters by using the highest level of circuit design, proprietary software, superior build quality, innovative features, and intuitive ergonomics with tremendous flexibility.

1.1 BEFORE OPERATING YOUR AVM 50

Check that you have received everything in the Packing List below and report any discrepancies to your dealer as soon as possible. Retain all packing materials and use them for any future shipment.

Packing List:

- AVM 50
- Remote Control
- 2 'AA' Batteries
- FM Antenna
- FM Antenna Adapter
- AM Loop Antenna
- IR Terminal Block (on rear panel)
- Power Cord
- Operating Manual

Keep the invoice that you received from your authorized Anthem dealer at time of purchase – without it, service will not be provided under warranty.

Safety Instructions:

- Read all safety precautions and instructions at the beginning of this manual.
- Do not connect power if there are any signs of damage to any part of the exterior.
- The Front Panel power buttons and the Rear Panel AC switch do not disconnect the product from the AC line. Ensure that the power cord remains readily accessible at all times.
- To connect power, only use the supplied double-insulated power cord.
- Allow adequate ventilation to ensure reliable operation and to prevent overheating. The amount of space required above the unit for radiation depends on ambient air temperature and circulation. Installation inside a cabinet with a front that can be closed is not recommended unless a fan is also installed to adequately draw air away from the top of the unit.
- Failing to comply with any safety instruction, precaution, or warning in this Operating Manual is in direct violation of the standards of design, manufacture, and intended use of the product.
- Anthem, Sonic Frontiers International, our agents, and any related party assume no liability whatsoever for the user's failure to comply with any of these requirements.

1.2 POWER REQUIREMENTS

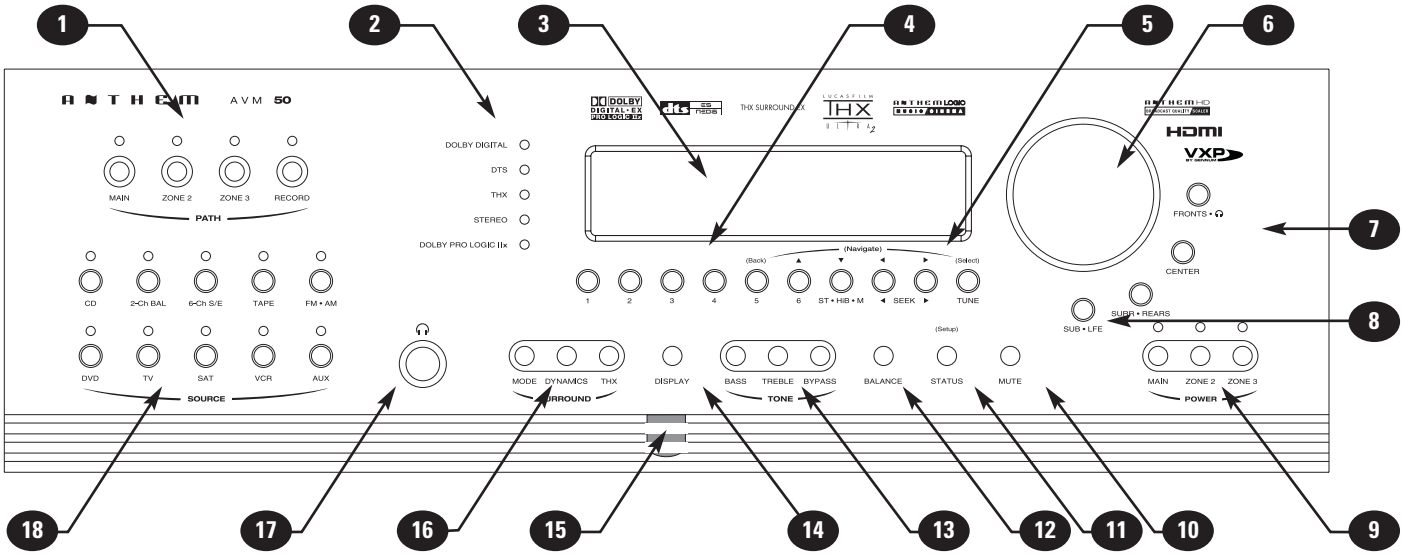
In countries where the line voltage is 120V, this product (low voltage version) operates from a single phase AC power source that supplies between 108V and 132V at a frequency of 60 Hz.

In countries where the line voltage is 220, 230, or 240V, this product (high voltage version) operates from a single phase AC power source that supplies between 216V and 264V at a frequency of 50 or 60 Hz.

1.3 IN-USE NOTICES

- Disconnect the power cord before connecting or disconnecting any components.
- Do not remove the top cover.
- Do not modify the product.

1.4 FRONT PANEL



1 – Path selection

2 – Mode / Surround Decoder indicators

3 – Display

4 – FM•AM Preset selection

5 – FM•AM Tuning / Setup navigation

6 – Master Control Knob

- Volume
- Tune for FM•AM
- Setting Adjustment for Mode, DD Dynamics, THX Options, Surround Mode Level / Bass / Treble / Balance, Path Bass / Treble / Balance, Display Brightness
- Setup Adjustment for Letters, Numbers, and Times

7 – Surround Mode / Headphone settings for Level / Bass / Treble / Balance

8 – Subwoofer / LFE Level settings

9 – Power On / Stand-By (MAIN / ZONE2 / ZONE3)

10 – Mute

11 – Status review / Enter Setup Menu

12 – Balance setting

13 – Bass / Treble settings

14 – LED and Display Brightness setting (see section 3.11) / Enter Video Adjustment Menu (see section 4.11)

15 – Front Panel Remote Control IR Sensor

16 – Surround Mode / Dynamics / THX Options / shortcuts to most common video adjustments (see section 4.11)

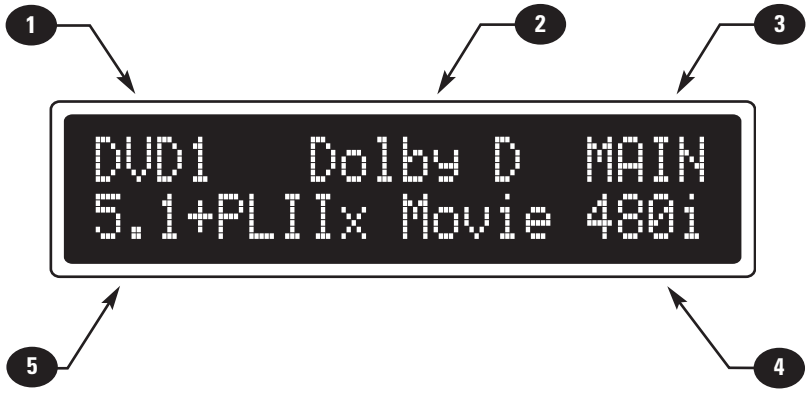
17 – Headphone Jack

18 – Source selection

For a larger diagram, see inside back cover.

1.5 FRONT PANEL DISPLAY

MAIN Display Example:



1 – Source selection.

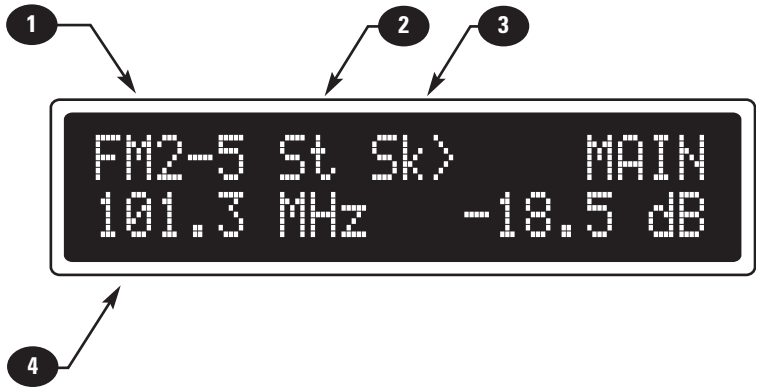
2 – Audio Input Format or Sleep indication if engaged.

3 – Path that the information on the display refers to.

4 – i) Video **input** resolution, ii) Volume while it's adjusted, iii) Muting indication.

5 – Surround Mode.

FM•AM Display Example:



1 – Band+Bank+Preset. The tuner has three FM banks (FM1, FM2, and FM3) and one AM bank.

2 – FM mode. Displays "St" when in stereo, "HB" when in Hi-Blend, or "Mn" when in mono.

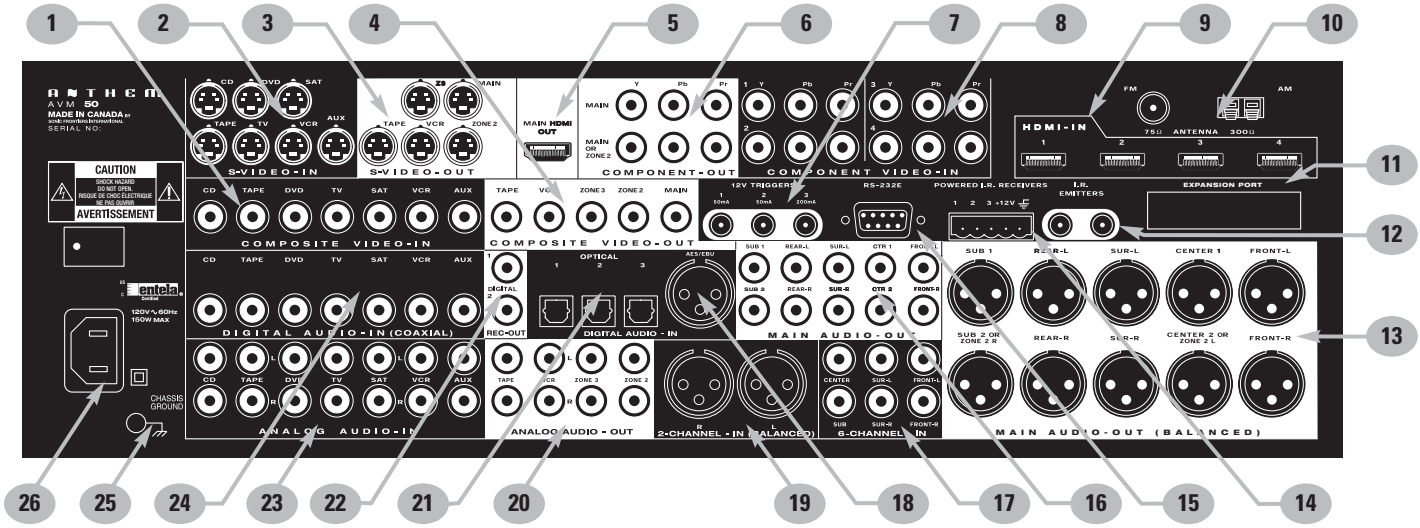
3 – Seek and scan indications.

4 – Frequency. FM is tuned to the nearest 0.1 MHz. AM is tuned to nearest 10 kHz (120V model) or 9 kHz (230V model).

If changes take place simultaneously in different Paths, the hierarchy of the display info is:

i) Volume changes, ii) Front Panel activity, iii) MAIN, iv) ZONE2, v) ZONE3, vi) RECORD, vii) HEADPHONE.

1.6 REAR PANEL



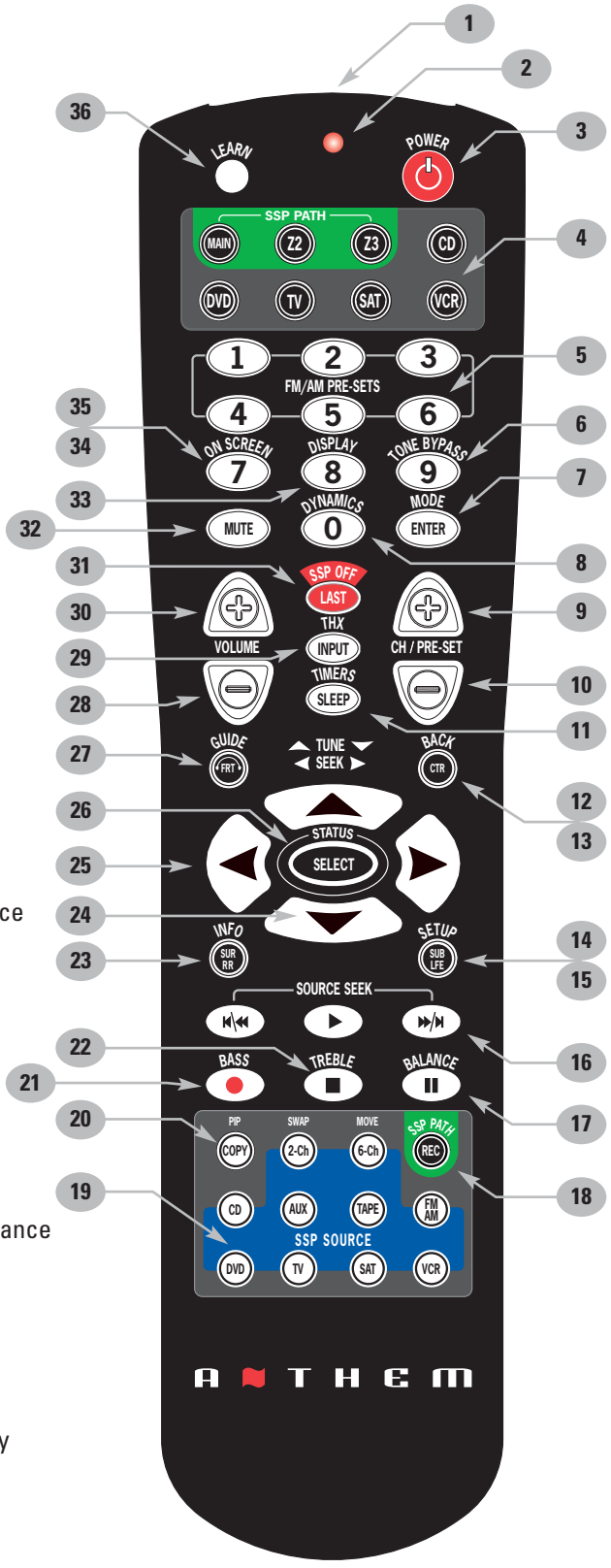
1 – 7 composite video inputs
2 – 7 S-Video inputs
3 – 5 S-Video outputs
4 – 5 composite video outputs
5 – HDMI output
6 – 2 component video outputs (3 jacks/ea)
7 – 3 12 Volt trigger outputs
8 – 4 component video inputs (3 jacks/ea)
9 – 4 HDMI inputs
10 – FM and AM antenna connections
11 – Expansion port
12 – 2 I.R. emitters
13 – Main audio output (10 balanced jacks)
14 – 3 Infra Red (IR) extension inputs with 12V supply
15 – RS-232 interface (bidirectional)
16 – Main audio output (10 jacks)
17 – 6-channel analog audio input
18 – AES/EBU digital audio input
19 – Analog audio balanced L/R input
20 – ZONE2, ZONE3, and REC analog audio outputs
21 – 3 optical digital audio inputs
22 – 2 digital audio REC outputs
23 – 7 analog audio L/R inputs
24 – 7 digital audio coaxial inputs
25 – Ground terminal
26 – Power cord connection

For a larger diagram, see inside back cover.

1.7 REMOTE CONTROL

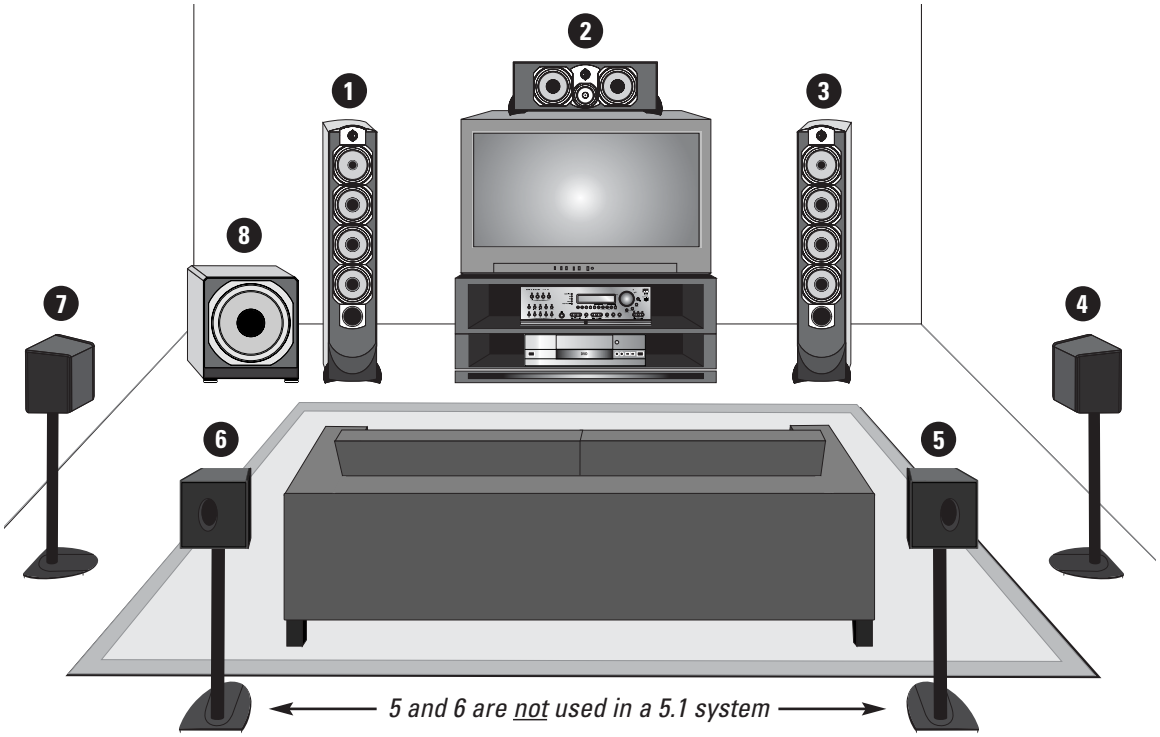
1 – IR Transmitter (front face)
2 – LED
3 – Power ON for MAIN, ZONE2, and ZONE3 control modes
Power ON/OFF for other control modes (see #4)
This key does not turn the AVM 50 off (see #31)
4 – Control mode (to control other components)
These are not the source selection keys (see #19)
5 – FM•AM Preset setting and selection
6 – Tone Bypass
7 – Surround Mode
8 – Dynamics setting
9 – FM•AM Preset Up
10 – FM•AM Preset Down
11 – Sleep Timer selection / Timers setting
12 – Center Channel selection for Level / Bass / Treble
13 – Back (for Setup)
14 – Subwoofer / LFE selection for Level
15 – Setup (Press & Hold for 3 seconds)
16 – Source Seek
17 – Balance
18 – RECORD Path selection (Must be in MAIN – see #4)
19 – Source selection
20 – Copy MAIN when ZONE2, ZONE3, or RECORD is selected
21 – Bass selection
22 – Treble selection
23 – Surrounds / Rears selection for Level / Bass / Treble / Balance
24 – ▲▼ • Tune for FM•AM
• Adjustment for Surround Mode, Dynamics, THX, Levels, Bass / Treble, Timers, Display Brightness
• Navigation for Setup
25 – ◀▶ • Seek for FM•AM
• Adjustment for Balance
• Navigation for Setup
26 – Status / FM•AM Direct Entry / Setup selection
27 – Fronts / Headphones selection for Level / Bass / Treble / Balance
28 – Volume Down
29 – THX selection
30 – Volume Up
31 – Power OFF when in MAIN, ZONE2, or ZONE3 control mode
32 – Mute
33 – Front Panel LED / Display Brightness setting / Lip-Sync Delay
34 – On-Screen display of current front panel display
35 – Scaler menu (Press & Hold for 3 seconds)
36 – Learn (for customization of remote)

Rear: Battery cover (when batteries are running low and a key is pressed, the backlight stops working and the LED blinks twice)



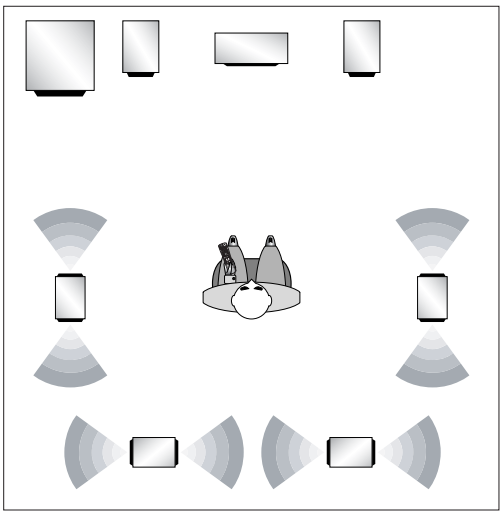
1.8 SPEAKER PLACEMENT

These illustrations show the typical speaker placement for a 7.1-channel surround system (the '.1' speaker is the subwoofer). Ideally, the Surround and Rear speakers should be positioned 2-3 feet above ear level. The subwoofer can be placed in any location where severe resonances are prevented – see section 3.2.

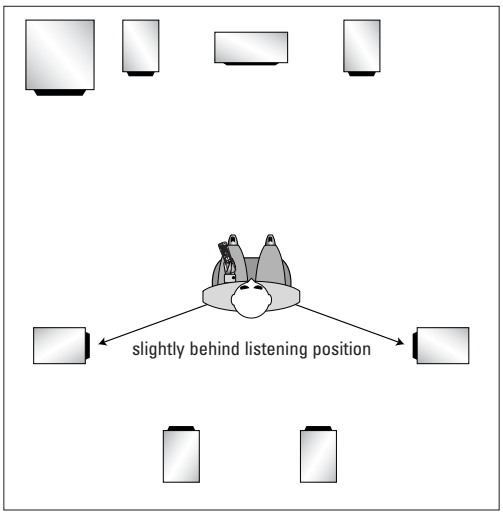


1. Front-Left
2. Center
3. Front-Right
4. Surround-Right*
5. Rear-Right*
6. Rear-Left*
7. Surround-Left*
8. Subwoofer

*Dipole speakers shown with 'null' facing listening area. Direct radiating speakers are shown below.



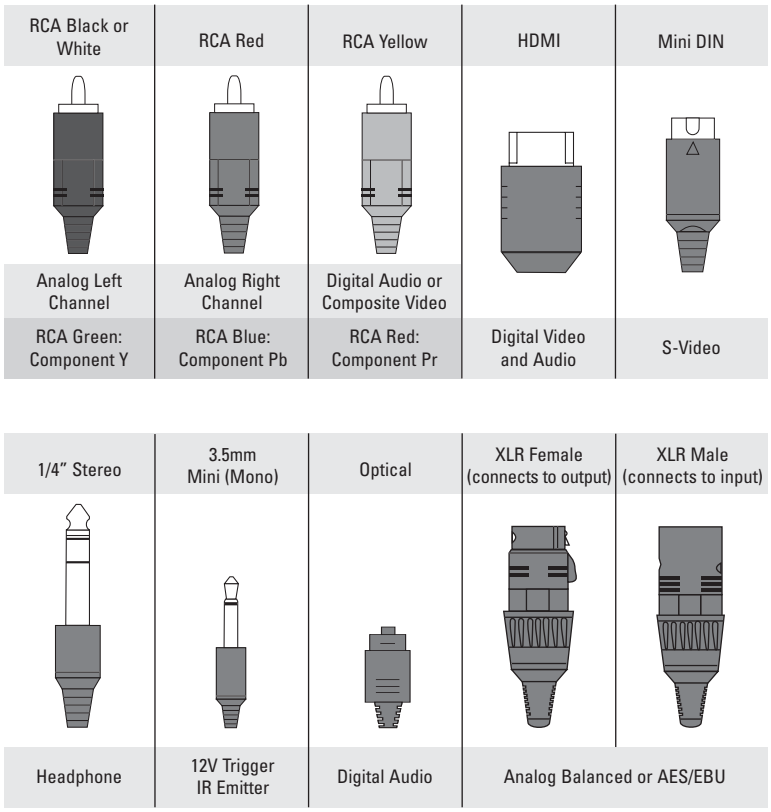
Placement with dipole surrounds



Placement with direct radiating surrounds

1.9 INTERCONNECTS

These illustrations show various audio, video, and 12V trigger connectors that are used between source components, the AVM 50, displays, and power amplifiers. Note that when RCA cables have coaxial construction and their impedance is 75 ohms, they are equally suitable for analog video and digital audio.



For digital video, a cable with DVI connection on one end and HDMI connection on the other can be used to connect equipment that has DVI jacks. **This cable is more reliable than using a DVI to HDMI adapter** on one end of a cable that has the same connector type on both ends.

Important notes regarding HDMI cables:
1080p uses twice the bandwidth that 720p and 1080i do – make sure that the cable is suitable for your application, **especially when using a long cable**, otherwise the picture may contain pixel dropouts or not play at all. For runs longer than approximately 20 feet, you may need a repeater or an HDMI optical connection – contact your dealer.

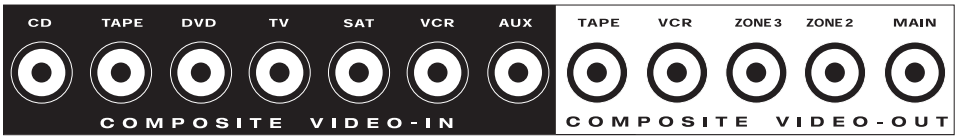
BE CAREFUL WHEN INSERTING HDMI CABLES. The connector should slide into the jack easily – do not insert it on an angle and do not force it in. Each connector contains 19 delicate pins, and cables with damaged pins can damage the jack. Jacks damaged through misuse are not covered under warranty. If your HDMI cables have been connected so many times that they are about to wear out, we strongly recommend that you replace them to prevent damage to any HDMI jacks in your system.

2. CONNECTIONS

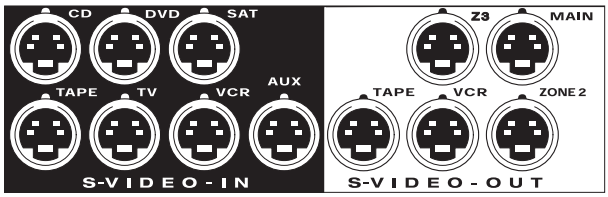
2.1 VIDEO CONNECTIONS

The best choice for video connection depends on your display(s) and source components. Any video input can be assigned to any number of Sources. To configure inputs, **see section 3.5** and to configure video outputs **see section 3.8.**

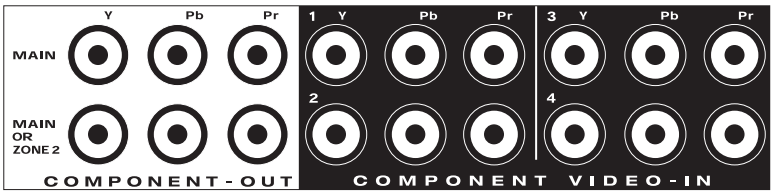
Composite Video (analog)**:**
This traditional format combines the black/white and color information for transmission on a single coaxial cable. To be displayed, it has to be comb-filtered apart, a process that degrades video quality substantially. Maximum resolution is 480i (NTSC) / 576i (PAL). If you use a VCR, one with S-Video output is recommended since Composite video can not be fed to the AVM 50's video processing section.



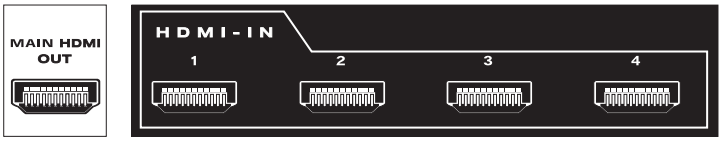
S-Video (analog)**:**
With S-Video, maximum resolution is also 480i/576i, though better quality results from its multi-conductor connection that keeps color and brightness signals separate. S-Video input can be converted to Component video and HDMI output (MAIN only).



Component Video (analog)**:**
Component video uses three coaxial cables and has a maximum resolution of 1080p/60 in bypass mode and 1080i/60 or 1080p/30 if processed. The second Component video output can be assigned in different ways – as processed Main output, unprocessed Main output, or unprocessed ZONE2 output (see section 3.8). Component video input can be converted to HDMI output. **If the source material is copy-protected with Macrovision, then maximum resolution using Component video output is 480p** (see section 4.14).



HDMI (digital)**:**
Audio and video are transmitted from source components to the AVM 50. Maximum video resolution is 1080p/60. Audio is transmitted as Dolby Digital, DTS, or up to six channels of PCM. Connect HDMI output to a display with HDMI or DVI input – one with High-bandwidth Digital Content Protection (HDCP) is required to display protected material. **If the source material is copy-protected with HDCP, then only HDMI video output is active** (see section 4.14). DVD players often enable copy protection even when disc is home-made.



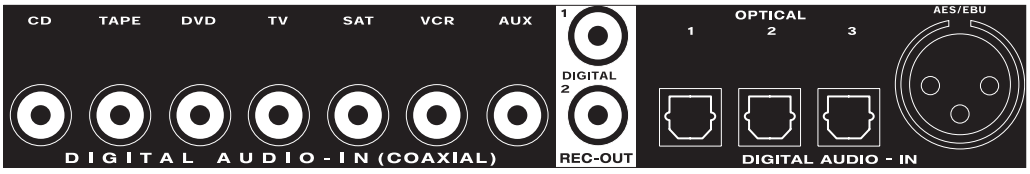
Note: HDMI switching requires at least two seconds.

2.2 AUDIO CONNECTIONS

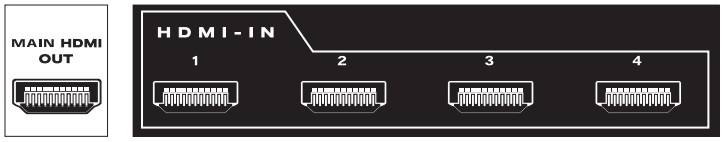
There are two methods of transmitting audio signals: Analog and Digital. Analog is an electrical waveform representation of sound and requires one cable for each channel. Digital represents sound using a sequence of numbers and requires only one cable for all channels.

Any input can be changed from the factory setting to either Digital or Analog audio connection. Furthermore, any one set to analog can be used with **Digital Signal Processing** for bass management, bass/treble control, time alignment, surround modes, and THX post-processing, or be set to **Direct** and bypass all digital stages. As well, **Auto-Dig** uses the digital connection when there's a digital signal at the input, and when there isn't, it switches to analog connection with DSP. For more information see sections 3.2, 3.3, 3.5, 4.7, and 4.8.

Digital Audio Inputs and Outputs:
Digital audio source components can be connected with a coaxial, optical, balanced, or HDMI cable. These carry 2-channel PCM, Dolby Digital, and DTS. The HDMI inputs also accept up to six channels of PCM.



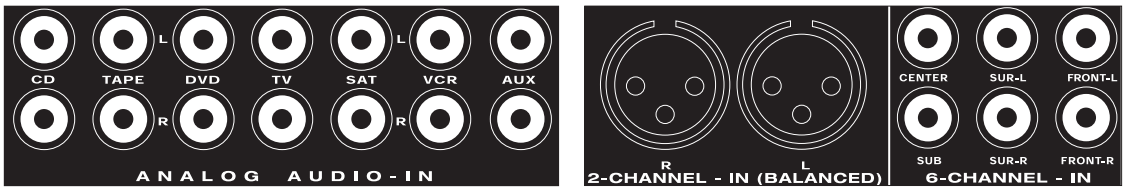
Should you need audio from the HDMI output to your display, it's 2-channel PCM.



Use the HDMI inputs if your display has HDCP-compliant HDMI or DVI input, otherwise use the coaxial or optical inputs. The AVM 50 also provides one balanced AES/EBU connection, which is used on professional equipment. Any digital input can be assigned to any number of Sources that are set to 'Digital'. **To change digital audio connection from the factory default assignments, see section 3.5.**

Digital Rec-Out can provide a signal to the digital audio input of a Mini Disc recorder, CD recorder, etc., from any Source set to 'Digital' (except HDMI) or 'Anlg-DSP' – see sections 3.5 to 3.7.

Analog Audio Inputs:
Analog audio connections are made with RCA or XLR cables.



If you are going to use ZONE2, ZONE3, or RECORD, connect both the digital and analog outputs from the source components. ZONE2, ZONE3, and RECORD require analog connection unless they're set to 'copy' MAIN (see sections 3.5 and 4.3).

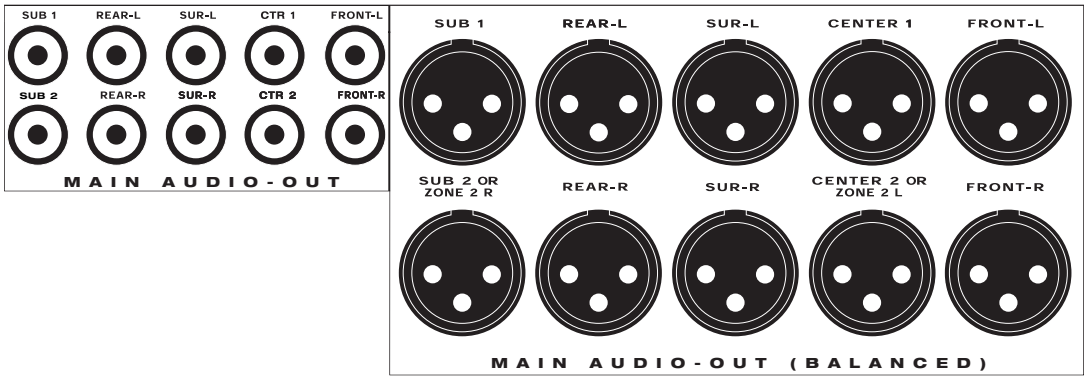
6-Ch Analog Input:
The 6-Ch input is for connecting DVD-Audio and multichannel SACD players. When 6-Ch is selected, the video signal from **DVD** input is routed to the video outputs by factory default – to change this, see section 3.5.

Analog Audio Outputs:
Balanced connection offers the highest transmission quality over long cable lengths, because it rejects noise and hum pickup. In the AVM 50, XLR output voltage is twice that of RCA (6 dB higher). The RCA outputs and the XLR outputs are active at the same time.

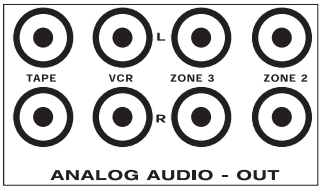
Parallel outputs are provided for a second center channel speaker and/or subwoofer. If your screen is large, you might want to use one speaker above it and another one below it. One way to tame room resonances is by using multiple subwoofers playing the same signal from different locations in the room.

If you are not using the second set of Balanced SUB2 and CENTER2 outputs, they can be reassigned as ZONE2 L/R outputs to ensure noise rejection if the ZONE2 amplifier has balanced input and it's far away from the AVM 50 (see section 3.7).

If you're using one Rear channel, use the Rear-L output to connect it (see section 3.2).



Shown below are the analog audio RECORD outputs, which connect to the inputs of tape recorders and VCRs, together with the outputs that connect to amplifiers for ZONE2 and ZONE3:



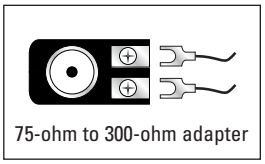
For ZONE2, ZONE3, and RECORD to have any output, the source components being used there must be connected to the AVM 50 with the same type of connection. For example, if you're using HDMI video output for MAIN, to use ZONE2, the source components must be connected to the AVM 50's inputs (in addition to HDMI) with analog L/R for audio, plus Component video, S-Video, or Composite video – whichever type the display in ZONE2 uses.

The only exception is when using Copy mode for audio – see section 4.3.

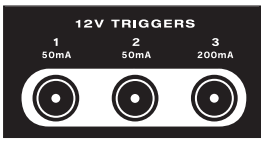
2.3 FM•AM ANTENNAS

To connect the AM loop antenna, press the spring-loaded tabs of the AM ANTENNA connector and insert the bare ends of the two wires. Move the antenna until best reception is found.

To connect the FM antenna, connect the two wires to the screw terminals of the 75-ohm to 300-ohm adapter, then connect the adapter to the FM ANTENNA connector. Move the antenna until best reception is found – this is usually a "T" formation. If your cable company provides FM service, you can connect the cable directly to the AVM 50.


75-ohm to 300-ohm adapter

2.4 12 VOLT TRIGGERS

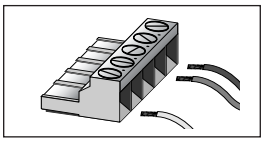


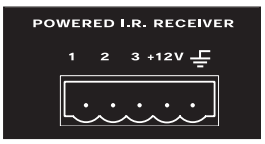
If your other components have provisions for a trigger, you can automatically turn them on and off together with the AVM 50, or when a specified Source is selected. Connect a trigger output from the AVM 50 to the trigger input of your power amplifier, display, etc., using a cable with 3.5mm mono mini plugs.

Trigger3 is designed to provide the extra current (up to 200 mA) required by relays in larger projectors and motorized screens. Depending on the equipment, a thicker wire gauge may be required (consult your dealer).

The AVM 50 provides flexible trigger options. From the factory, all the triggers are disabled. Through the Setup Menu, you can specify the conditions for enabling triggers (see section 3.10).

2.5 POWERED I.R. (INFRA RED) RECEIVERS





External IR receivers allow the Remote Control to be used from other locations in your home. Once an IR receiver is wired to a selected room, connect it to one of the three I.R. RECEIVER inputs through the removable terminal block. To use the terminal block, remove it from the AVM 50, loosen the proper screw, insert the wire in the slot, tighten the screw onto the wire, and insert the terminal block into the AVM 50. See section 3.10 for Setup information.

In addition, there is no need for an external 12V supply to power the receivers – use the AVM 50's built-in supply instead for up to three IR receivers, and connect according to the IR receiver manufacturer's instructions.

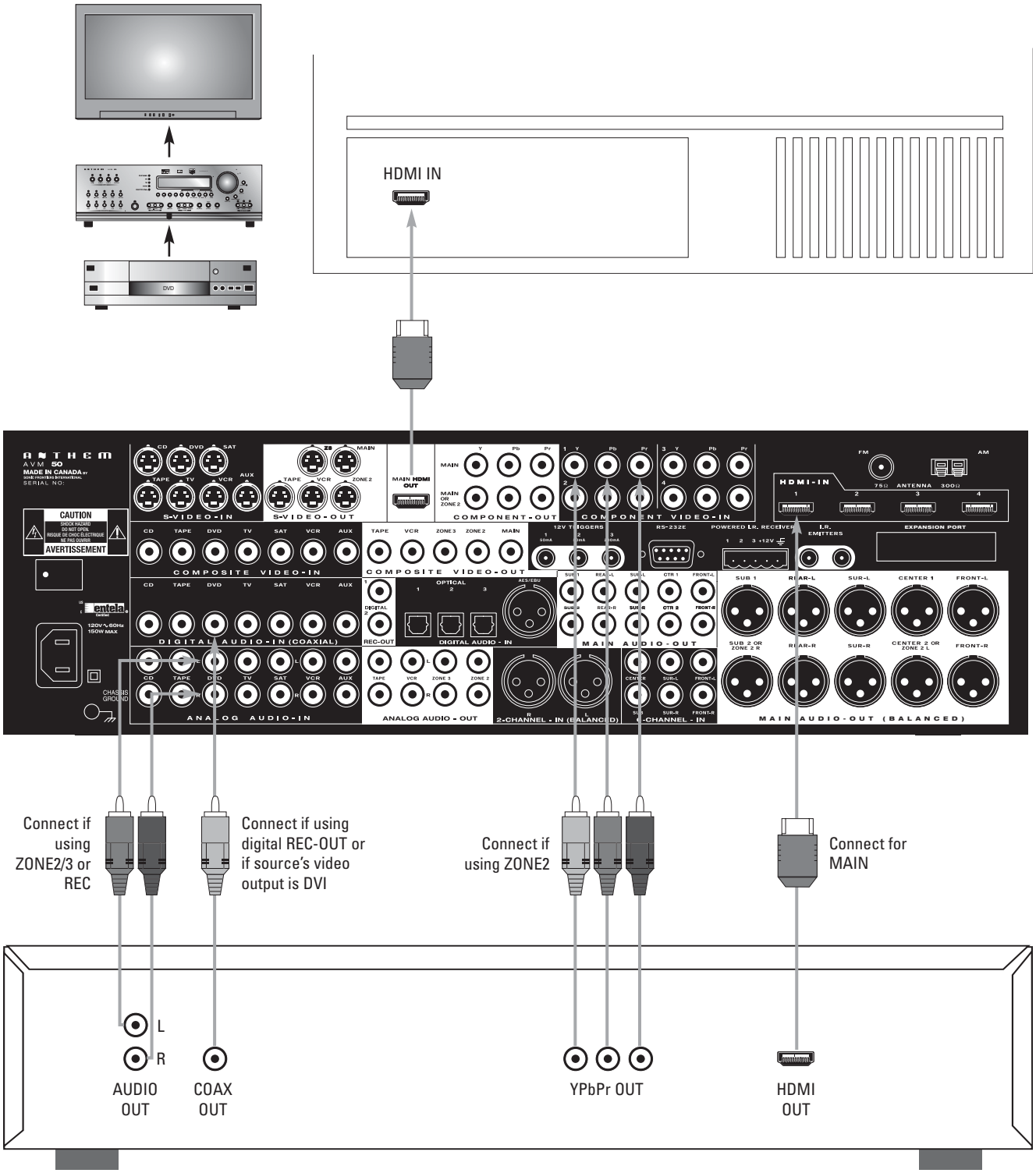
Custom Installers: The AVM 50's IR inputs sense modulated 38 kHz carrier, not demodulated data. With some control systems, an emitter face-to-face with an IR receiver may be needed.

2.6 I.R. (INFRA RED) EMITTERS

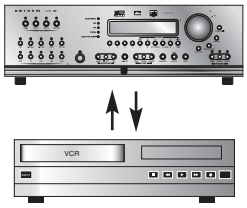
External IR emitters allow control of your source components from any location in your home that has an IR receiver wired to the back of the AVM 50. After positioning the IR emitter according to its instructions, connect it to I.R. EMITTER output. Commands that come in through the rear I.R. RECEIVER connections are re-transmitted through the IR emitters.

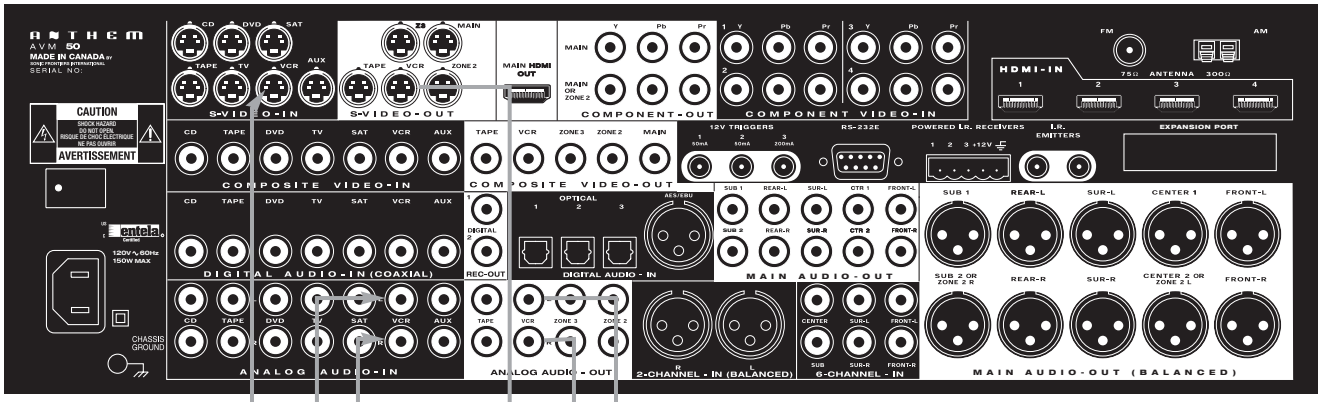
Example 1: DVD Player to AVM 50 to Main Display

HDTV receivers are connected the same way as DVD players.

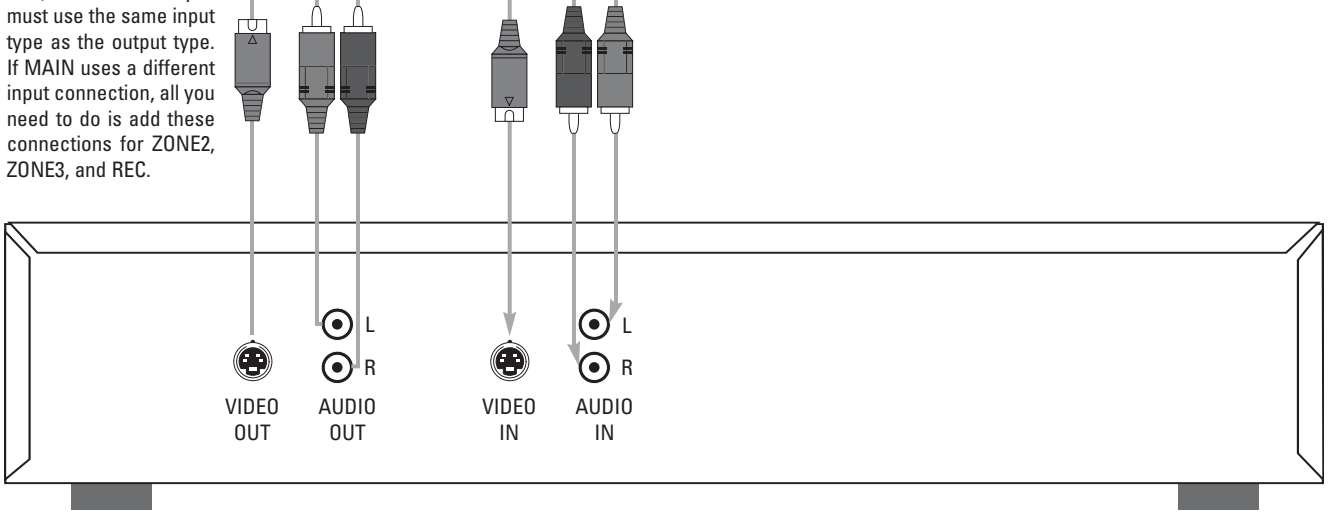


Example 2: Video Recorder to AVM 50

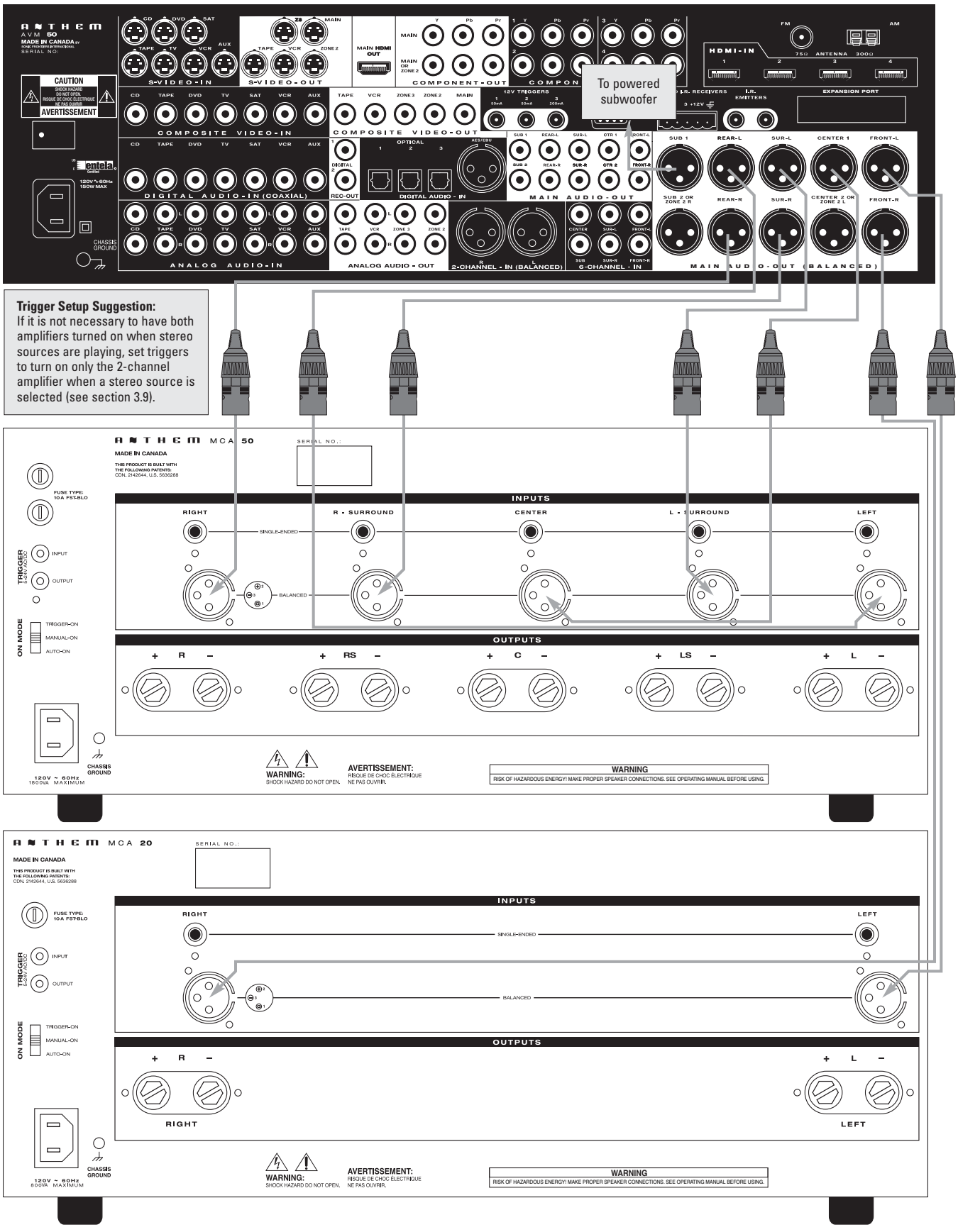




For ZONE2, ZONE3, and REC, in most cases you must use the same input type as the output type. If MAIN uses a different input connection, all you need to do is add these connections for ZONE2, ZONE3, and REC.



Example 3: AVM 50 to Amplifiers and Subwoofer (Balanced connection shown, single-ended is similar)



3. **SETUP** MENU

For optimum performance and enjoyment, it is crucial that your AVM 50 be properly set up. This may appear like a lot of work, however, most settings do not need to be changed from the factory defaults.

The most important things are entering how many speakers you have (the factory default is 7.1-channel) and the distance from each speaker to the listening area (menu 3), balancing speaker output levels to one another (menu 4), and entering information about your display (menu 8). The rest are largely for fine tuning and personal preference – the surround mode presets in menu 5, for example, should be set up **after** you have played a variety of source material and have decided which surround modes you like best.

Menus that involve audio test signals should be set up in the order that they appear. Illustrations throughout this section show the On-Screen display menus in that order. For ease of viewing, use of the On-Screen display is recommended, although the Front Panel display shows similar information.

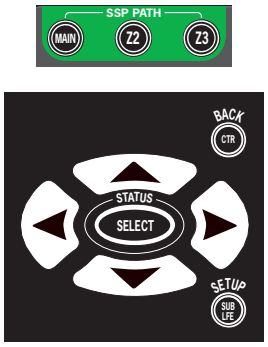
Alternatively, most of the setup can be done on your personal computer through RS-232 connection and a program called Setup Editor (available from our web site). Setup Editor can also save your configuration as a backup file. Setup Editor cannot play test tones – calibration still has to be done with the Setup Menu.

HOW TO ENTER THE SETUP MENU

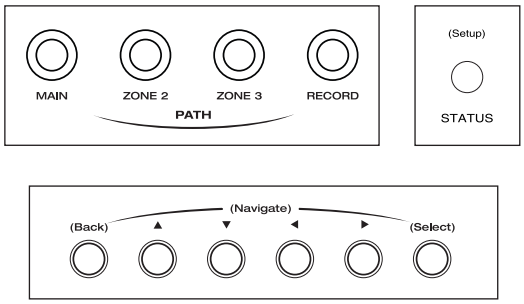
The Setup Menu can be accessed from either **MAIN** or **ZONE2**. The On-Screen display shows only in that Path (MAIN – any output except Composite, ZONE2 – S-Video only). Audio test signals only play from MAIN.

To enter the Setup Menu:

Remote Control
Make sure the appropriate control mode is set, then press **SUB/LFE (SETUP)** for 3 seconds.



Front Panel
Make sure the appropriate Path is selected, then press and hold **STATUS (Setup)** for 3 seconds.



HOW TO NAVIGATE INSIDE THE SETUP MENU

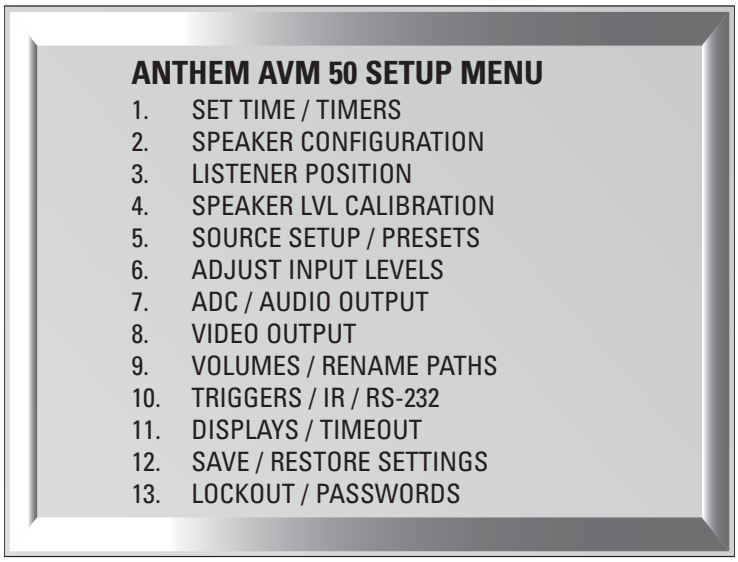
- Use the ▲ ▼ buttons to scroll through menus.
- Press **SELECT** to choose a menu item.
- Use the ▲ ▼ and ◀ ▶ buttons to change settings.
- Press **BACK** to return to previous item or menu.

HOW TO EXIT FROM THE SETUP MENU

Press **BACK** as many times as necessary. Each time BACK is pressed, the previous item or menu returns. The Setup will exit automatically if not used for 5 minutes to prevent the potential of a burned-in On-Screen image with some types of display.

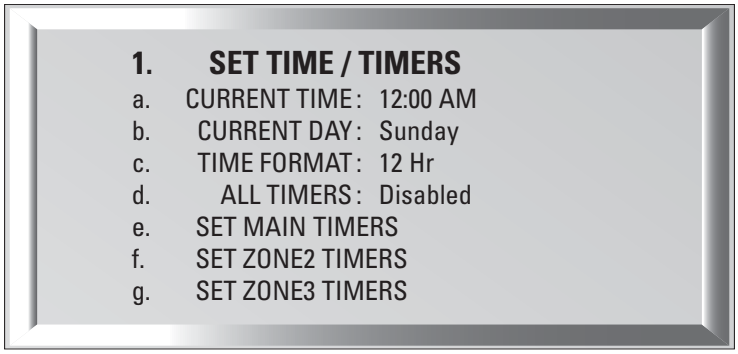
SETTING UP THE AVM 50

When you enter the Setup Menu, your On-Screen display will show the menu below. Only 8 menu items can be displayed at one time. To go to a submenu, highlight a menu item in red and then press **SELECT**.



3.1 SET TIME / TIMERS

The time and day, plus 6 different timers are set in this menu. The timers in the AVM 50 are like an alarm clock, but allow two different timer settings for each of MAIN, ZONE2, and ZONE3.

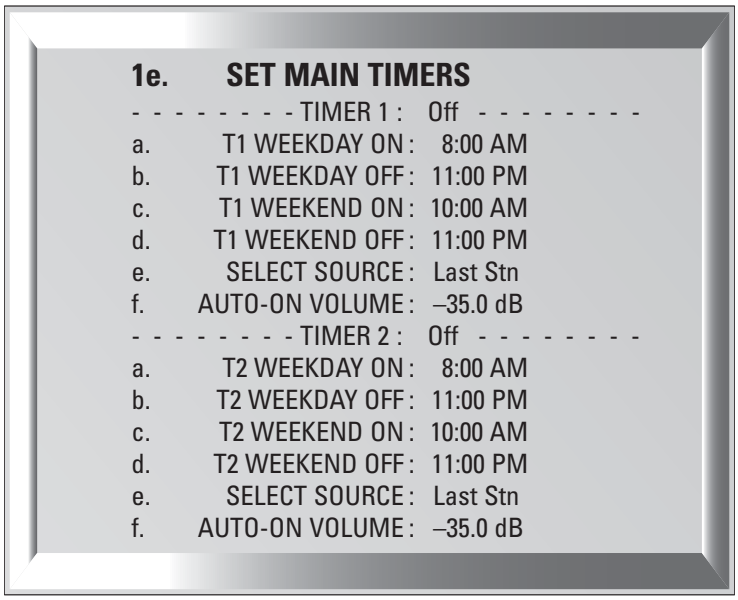


To set Current Time and Day:

- Enter the Setup Menu. Go to '1. SET TIMERS/TIME' and press **SELECT**.
- Press the ▼ button until you reach 'c. TIME FORMAT: 12 Hr'.
- Use the ◀ ▶ buttons and choose '12 Hr' or '24 Hr'.
- Press the ▼ button to go to 'a. CURRENT TIME: 12:00 AM'.
- Press **SELECT**. '12' will be highlighted in red.
- Use the Master Control Knob or the ▲ ▼ buttons to set the current hour.
- Press the ▶ button. '00' minutes will be highlighted.
- Use the Master Control Knob or the ▲ ▼ buttons to set current minutes.
- Press **BACK** to return to the menu line.
- Press the ▼ button to go to 'b. CURRENT DAY: Sunday'.
- Use the ◀ ▶ buttons to set the current day.

All Timers:
This allows you to simultaneously 'Enable' or 'Disable' all Timers for MAIN, ZONE2, and ZONE3.

Highlighting 'e. SET MAIN TIMERS' in menu 1 and then pressing **SELECT** displays this menu:



Timer Options:
There are two Timers for Main and each Zone to allow greater flexibility. You can set individual week and weekend auto-on/off times twice – once for the morning and again for the evening, for example.

Using the ◂ ▸ buttons, TIMER 1 and TIMER 2 choices are:

- '**Off**' – Timer is disabled and will not come on at any time or day.
- '**Week**' – Timer will operate for Monday to Friday only.
- '**Wkend**' – Timer will operate for Saturday and Sunday only.
- '**Wk+Wkend**' – Timer will operate for every day of the week.

On and Off Times:
Individual auto-on/off times are entered for:

T1 or T2 WEEKDAY ON: Sets the Monday to Friday turn-on time.

T1 or T2 WEEKDAY OFF: Sets the Monday to Friday turn-off time.

T1 or T2 WEEKEND ON: Sets the Saturday and Sunday turn-on time.

T1 or T2 WEEKEND OFF: Sets the Saturday and Sunday turn-off time.

Timers may also be set to only turn on or only turn off (see Example 2) – this way, the AVM 50 can be set to turn on automatically, and it won't turn off until you turn it off manually when you're done for the day.

If the AVM 50 is already on, 'Timer On' settings are ignored to ensure that Source and Volume are not changed when you are already listening to a program.

Select Source:
Select what you want playing when a Timer turns the power on – any Source, any preset FM•AM station, or Last Stn (the tuner setting when AVM 50 was last turned off). Be sure that the **source component** and the **power amplifier** are turned on or will be on at the Timer turn-on time. If your components have trigger inputs, you can set a AVM 50 trigger to turn them on automatically (see section 3.10).

Auto-On Volume:
Sets the Volume that will play when a Timer turns the power on. The volume increases slowly until the setting is reached.

Example 1: Select a Source for the ZONE2 Timer:

- Enter the Setup Menu. Go to '1. SET TIME/TIMERS' and press **SELECT**.
- Press the ▼ button until you reach 'f. SET ZONE2 TIMERS'.
- Press **SELECT**. The '1f. SET ZONE2 TIMERS' submenu will appear.
- Press the ▼ button until you reach 'e. SELECT SOURCE'.
- Use the ◀ ▶ buttons to change to desired Source.
- Press **BACK** to leave this submenu and return to the SET TIME/TIMERS menu.

To have the Timer turn on to a Preset Station, do the following from the 'e. SELECT SOURCE' menu line:

- Use the ◀ ▶ buttons to change to 'Last Stn'.
- Press **SELECT** to highlight 'Last Stn'.
- Use the ▲ ▼ buttons to change to the desired FM•AM Preset. These will scroll from 'AM 1-1' to 'AM 1-6' then from 'FM1-1' to 'FM3-6' and back to 'Last Stn'.
- Press **BACK** once you have selected a preset.

The Timer submenu setup procedure is the same for MAIN, ZONE2, and ZONE3.

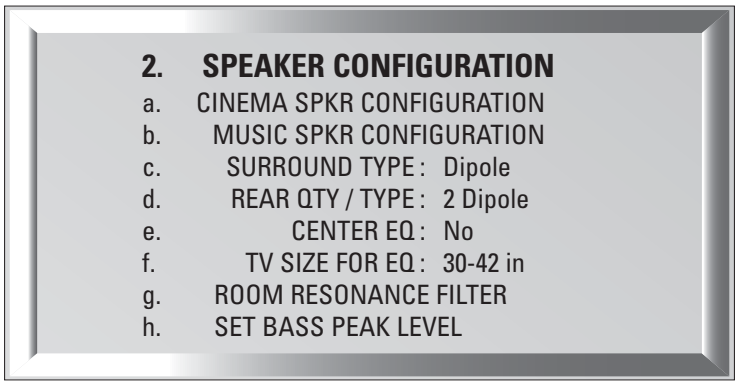
Example 2: Change ZONE2, TIMER2 to come on Weekdays at 7:35 AM.

- Enter the Setup Menu. Go to '1. SET TIME/TIMERS' and press **SELECT**.
- Press the ▼ button until you reach 'f. SET ZONE2 TIMERS'.
- Press **SELECT**. The '1f. SET ZONE2 TIMERS' submenu will appear.
- Press the ▼ button to reach 'TIMER 2: Off'.
- Use the ◀ ▶ buttons to change to 'Week'.
- Press the ▼ button until you reach 'a. T2 WEEKDAY ON: 8:00 AM'.
- Press **SELECT**. The hour is now in red, use the Master Control Knob or the ▲ ▼ buttons to set the hour to '7' AM. (Continuing through '12' will advance the AM/PM settings.)
- Press the ▶ button. '00' minutes will be highlighted.
- Use the Master Control Knob or the ▲ ▼ buttons to set the minutes to '35'.
- Press **BACK** to leave this submenu and return to SET TIME/TIMERS menu.

When scrolling between '11 PM' and '12 AM' settings, the display shows '--:--'. Timers set in the '--:--' position will be skipped. Thus, to set the Timer to only turn on, set the Off time to '--:--'. To set the Timer to only turn off, set the On time to '--:--'.

3.2 SPEAKER CONFIGURATION

The Speaker Configuration Setup allows you to enter information about how many speakers you have in your system, and their relative size and type. Here you will also set up the bass management. Entering information about the size of your speakers will enable the AVM 50 to control bass information so it is not lost or distorted by smaller speakers that are unable to reproduce large amounts of bass.



Cinema and Music Configurations:
The AVM 50 allows you to set two separate bass management configurations – **Music** can be tailored for music (and movies that do not contain a Low Frequency Effects '.1' track), and **Cinema** for source material that contains LFE, including all 5.1/6.1 channel movie and music sources. These configurations can be assigned to each Source.

Use of the Music configuration is optional. Once you enter menu 2b. MUSIC SPKR CONFIGURATION, it asks whether or not you want to use the same settings as the Cinema configuration – 'Yes' is the factory default.

Setting up a configuration is described later in this section. Assigning a configuration to a Source or enabling automatic activation according to presence/absence of LFE is explained in section 3.5.

Surround and Rear Speaker Quantity and Type:
Surround speakers fall under two radiation pattern categories: Direct and Dipole. No delay is necessary in channels using dipole speakers – the sound is already delayed through room reflections. When dipoles are selected as the SURROUND TYPE and/or REAR TYPE, their distance will automatically equal the greatest distance in menu 3. LISTENER POSITION (see section 3.3).

If you are using one Rear speaker, set d. REAR QTY/TYPE to 1 speaker and use the Rear-L output.

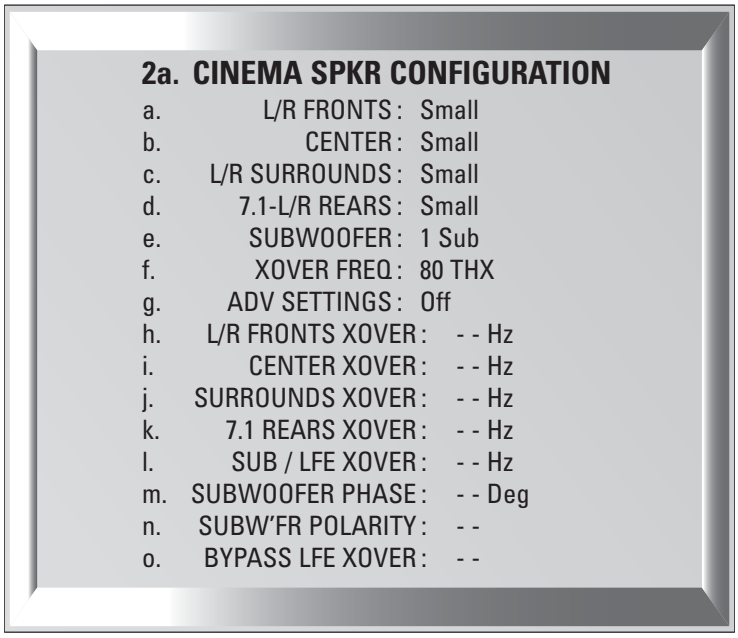
If you are using no Rear speakers, skip the d. REAR QTY/TYPE setting. It makes no difference what it's set to.

Center EQ:
When a center channel speaker sits on top of or below a vertical surface such as a TV screen, frequency response can be altered by the reflections, making dialog less natural. With Anthem's unique CENTER EQ set to 'Yes', timbre can be restored using response curves specifically made to cancel effects of TV screens.

TV Size For EQ :
This is used to determine the frequency ranges of CENTER EQ. Since room/TV/furniture acoustics vary, as do characteristics of center channel speakers from model to model, you may wish to spend a little time experimenting to determine which setting works best – play 3 or 4 different DVDs and listen to center channel dialog to find the setting that sounds the clearest.

Select from 18"- 30" / 30"- 42" / 42"- 54" / 54"- 66" / 66"- 78". If UNITS OF MEASURE is set to 'm' in menu 3, the selections are 45 - 75 cm / 75 - 100 cm / 100 - 135 cm / 135 - 165 cm / 165 - 200 cm. Use the setting that provides the clearest dialog, even if it doesn't match the size of your TV. Turning the Center EQ off may sound best – let your ears be the judge!

Highlighting 'a. CINEMA SPKR CONFIGURATION' in menu 2 and then pressing **SELECT** displays this menu:



Small or Large:
Most speakers should be set to 'Small' and be used with a subwoofer, unless they use large drivers that can handle bass and LFE. Even then, physically large speakers may need a subwoofer for bass frequencies, particularly the bass of the '.1' LFE channel. All THX certified speakers are designed to be set to 'Small'. After highlighting a speaker or speaker group, use the ◂ ▸ buttons to select to 'Large', 'Small', or 'None'.

Subwoofer:

- **'1 Sub'** The subwoofer plays two things – bass from channels set to Small, plus the Low Frequency Effects track on 5.1-channel source material. This setting is preferred by THX.
- **'1 Super'** As above, except bass from all channels is included, not just the ones set to Small. This setting is not recommended for the Cinema configuration.
- **'2 Sub'** or **'2 Super'** – Select if you're using both Subwoofer outputs. This simply reduces the subwoofer channel's test noise level to compensate for the additional subwoofer.

'None' Settings:
No information is lost if less than 7.1 speakers are used and this menu is set correctly.

- **If CENTER is set to 'None',** the Center channel plays from the L/R Front speakers.
- **If SURROUNDS are set to 'None',** the L-Surround channel plays from the L-Front channel, and the R-Surround channel plays from the R-Front channel (except Dolby Pro Logic mode).
- **If REARS are set to 'None',** the Rear channel on Surround EX and DTS-ES DVDs plays from the Surround channels.
- **If SUBWOOFER is set to 'None',** the Subwoofer channel (bass from 'Small' channels plus the LFE track) plays from 'Large' L/R Front and Surround speakers.

If you are using 5.1 speakers, use the SURROUND outputs and set REARS to 'None'.

Crossover Frequency:
The crossover (Xover) divides the audio signal into two frequency bands, thereby restricting the amount of bass sent to any speaker set to 'Small', and preventing midrange and treble from going to the subwoofer.

Using the ◂ ▸ buttons, choose a frequency between 25 Hz - 160 Hz suitable for the low frequency capability of the speakers in your system. If you are using THX certified speakers, the crossover should be set to 80 Hz.

The subwoofer's built-in crossover should be bypassed – be sure to set it to the highest frequency.

Note that a crossover does not cut frequencies off, but rolls them off. Setting XOVER FREQ to the very limit of your speakers' low frequency capability may not give the best results. If XOVER FREQ is set to 80 Hz, for example, your main speakers will still be playing lower frequencies – they just won't have to play them as loudly. This also lightens the load on the amplifier, leaving extra power for mid and high frequencies.

Bass response is most dependent on room acoustics, and some experimentation with subwoofer placement is highly recommended – start by placing the subwoofer in the listening area, play some music with a range of bass notes, and walk around the room. Locations where bass sounds even, without certain notes being much louder than others, are usually good spots for placing the subwoofer and getting response that's even.

LFE is redirected only when Subwoofer is set to 'No'. If set to 'Yes' or 'Super', Cinema Configuration XOVER FREQ should not be set much lower than 80 Hz, otherwise some LFE information will be lost.

Advanced Settings – Crossover Frequency:
When 'ADV SETTINGS' is set to 'On', each speaker type can be set to a Crossover Frequency that best suits its low frequency characteristics and interaction with the room. For example, if placing a speaker against a wall reinforces the bass making it excessive, the Advanced Crossover can be used to roll off the excess. A very low setting, such as 25 Hz, can be used to protect full-range speakers from frequencies that are too low for them. Scrolling below 25 Hz or above 160 Hz brings the 'Off' setting, which bypasses the crossover.

If room acoustics cause response to drop in the crossover region, the Subwoofer setting can be set to overlap the settings of other speakers to compensate, for instance setting SUB/LFE XOVER to 90 Hz and L/R FRONTS XOVER to 70 Hz. If there is a bass peak in the crossover region, you can spread the settings apart to flatten response, for example SUB/LFE XOVER to 80 Hz and L/R FRONTS XOVER to 100 Hz.

Advanced Settings – Subwoofer Phase and Polarity:
Room acoustics vary. If you have the flexibility, experiment with subwoofer placement to determine where it sounds best in your system, providing deep, tight, and well defined bass. Certain subwoofer positions, however, may cause bass frequency cancellation, meaning that when your front speakers and subwoofer are "out-of-phase", they work against each other, resulting in weak and sometimes dislocated sounding bass. This can be corrected by adjusting the Subwoofer Phase and Polarity settings in this submenu.

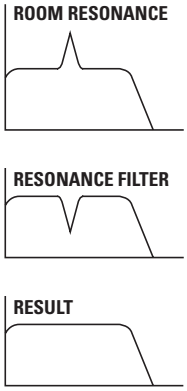
If your subwoofer has phase and/or polarity controls, set them to zero/normal before making any adjustments to the AVM 50's Subwoofer Phase and Polarity settings.

As a general guide, set Polarity to 'Normal' if the subwoofer is placed close to the front speakers, and to 'Inverted' if the subwoofer is located behind the listening area or toward the back of the room. With bass material playing, switch Polarity from 'Normal' to 'Inverted' as a quick check – leave it in the position where bass is louder and more solid sounding.

Subwoofer Phase allows you to take things a step further and fine tune the phase alignment of the subwoofer to your front speakers. Again, adjust Phase for the least amount of cancellation by listening for loudest and most solid bass. Alternatively, listen to the 'shhhh' noise created between FM radio stations, and adjust Phase until you find the most natural sounding transition between your main speakers and subwoofer.

Advanced Settings – Bypass LFE Crossover:
If you have set SUB/LFE XOVER to much lower than 80 Hz, the upper portion of the LFE signal will be lost. With BYPASS LFE XOVER set to 'Yes', LFE goes to the subwoofer without going through the crossover, preventing loss of LFE information. This also applies to the 6-Ch input's SUB input (effectively, an LFE input).

Highlighting 'g. ROOM RESONANCE FILTER' in menu 2 and then pressing **SELECT** displays this menu:

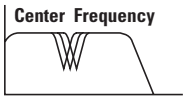



```
2g.  ROOM RESONANCE FILTER
a.          TEST TONE :  Off
b.    TEST TONE LEVEL : +0.0 dB
c.     TEST TONE FREQ :  21 Hz
d.         APPLY FILTER :  No
e.   FLTR CENTER FREQ :  60 Hz
f.         FILTER DEPTH :  1 dB
g.         FILTER WIDTH :  20 Hz
h.     THX ULTRA2 SUB :  No
i.  THX BG COMPENSATION :  NA
```

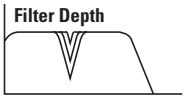
Rooms often have a single prominent resonance peak which can make bass sound boomy, even with the finest subwoofer. The AVM 50 has a proprietary set of low frequency test tones that allow you to find and easily remove that resonance peak.

The Room Resonance Filter is a notch filter – it is not designed to boost weaker bass frequencies. While running the test tones, if you discover that instead of a prominent peak, there is a prominent dip in response, the best way to fill it is through a subtle repositioning of the subwoofer and/or listening position. Using electronics alone to accomplish this is often met with frustration, for example, a 10 dB boost would require the amplifier to work ten times harder, as well as speakers that can handle that much more power.

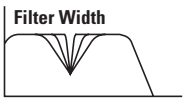
Test Tone and Test Tone Level:
Test tones sweep from 18 Hz up to the XOVER FREQ (or the SUB/LFE XOVER frequency) that you have set in menu 2a. or 2b., whichever is higher. You can vary the level to obtain a comfortable playback volume.



Filter Center Frequency:
The frequency that is reduced the most when the filter is applied is called the Center Frequency. Set this to the frequency that sounds the loudest or most boomy when the built-in test tones are played. If you're using a sound pressure level meter, set it to 'Flat' or 'C-weighting'.



Filter Depth:
This is the amount of center frequency 'cut', or reduction in volume, in the subwoofer channel. Frequencies just above and just below the center frequency are also reduced, but not as much. Range is from 1 to 20 dB. Adjust to bring the level of the resonant peak down to the same level as the other frequencies.



Filter Width:
This adjustment varies the range and sharpness of the filter. For example, if Filter Width is set to 3 Hz, the Room Resonance Filter cuts a very narrow range at the filter center frequency. If Filter Width is changed to 18 Hz, a broader range is reduced. Adjust so that resulting frequency response is as flat as it can be made.

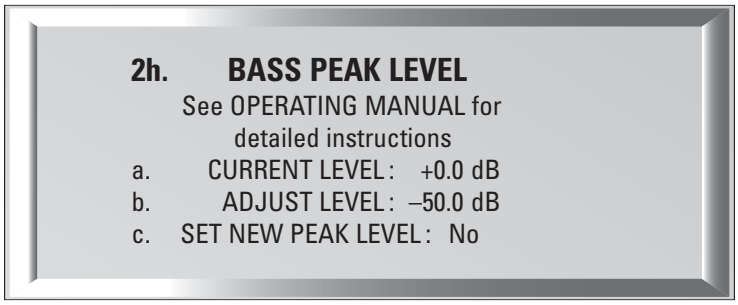
Changing Center Frequency and Depth settings affects the available range of Width and causes it to automatically decrease if required.

THX Boundary Gain Compensation:
If your listening room layout results in the subwoofer and/or listeners being too close to a wall, an excessive bass effect can result. With a subwoofer that extends to 20 Hz, including all THX Ultra2 certified subwoofers, Boundary Gain Compensation can improve bass balance. To enable, set THX ULTRA 2 SUB to 'Yes' and then THX BG COMPENSATION to 'On'.

Procedure for adjusting Room Resonance Filter:

- Enter the Setup Menu. Go to '2. SPEAKER CONFIGURATION' and press **SELECT**.
- Press the ▼ button until you reach '2g. ROOM RESONANCE FILTER' and press **SELECT**.
- Use the ◀ ▶ buttons to set TEST TONE to 'Auto'. Press **SELECT** to start automatic sweeping of the test tones. Alternatively, you can set TEST TONE to 'Manual' – to vary the frequency, press the ▲ ▼ buttons to reach 'c. TEST TONE FREQ', then use the ◀ ▶ buttons to change frequency.
- Some subwoofers are not able to accurately reproduce frequencies below 30 Hz or so, especially at higher levels. In addition, it can be quite difficult to hear these frequencies. If playing them doesn't 'sound right', do not continue to play them.
- Line 'c. TEST TONE FREQ' changes to show the frequency being played during automatic sweep. Listen for (or measure) the frequency that sounds too loud compared to the other frequencies.
- Press the ▼ button until you reach 'e. FLTR CENTER FREQ' and select the frequency that is closest to the test tone frequency that was found to be the loudest.
- Press the ▲ button until you reach 'd. APPLY FILTER' and set to 'Yes'.
- Press the ▲ ▼ buttons to go to 'f. FILTER DEPTH' and 'g. FILTER WIDTH'. Adjust both to achieve the flattest response across the range of test tones.
- Press **BACK** to stop the test tones and leave this submenu.

Moving to the next menu, highlight 'h. BASS PEAK LEVEL' in menu 2 and press **SELECT** to display:



The loudest part of movie soundtracks is usually the bass that comes from the LFE track. The Bass Peak Level Manager 'looks ahead' at the bass signal, and reduces the chance that your speakers will overload by tailoring bass output to match their capabilities. **Better subwoofers generally have their own protection and do not need BPLM to limit bass output.** BPLM is disabled if 'THX Ultra2 Subwoofer' is set to 'Yes' in menu 2g.

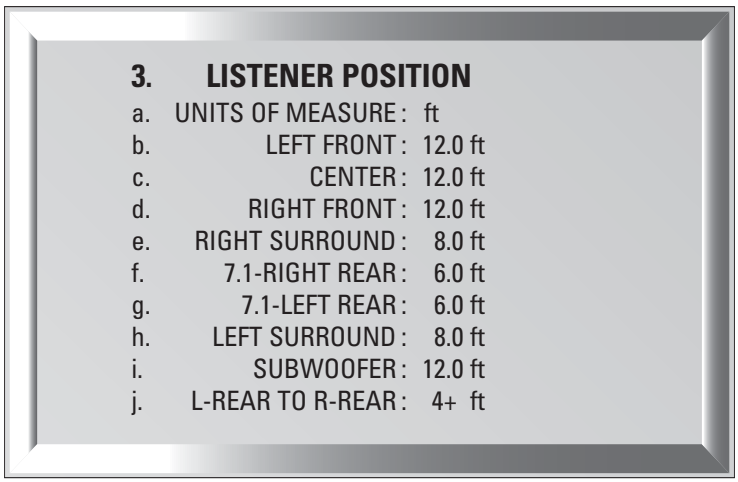
Procedure for setting Bass Peak Level:

- Enter the Setup Menu. Go to '2. SPEAKER CONFIGURATION' and press **SELECT**.
- Press the ▼ button until you reach '2h. BASS PEAK LEVEL' and press **SELECT**.
- Press the ▼ button until you reach 'b. ADJUST LEVEL –50.0 dB'.
- A test signal should be audible. Use the ◀ ▶ buttons to turn up the level. Stop when distortion from the subwoofer (or 'Large' L/R Fronts if Subwoofer is set to 'No') begins to appear, then lower the level of the test signal until the distortion just disappears. **The test signal will become very loud but do not stop at a setting that's too low, or bass will be too low when you play a movie or music.**
- Press the ▼ button to go to 'c. SET NEW PEAK LEVEL'.
- Use the ◀ ▶ buttons to change to 'Yes'.
- Press **SELECT** and 'a. CURRENT LEVEL' will change to the new setting. The AVM 50 will not allow bass output to exceed this new setting.
- Press **BACK** to leave the submenu.

3.3 LISTENER POSITION

The Listener Position menu lets you enter the distance between each speaker and the listening area. Ideally, speakers should be placed at an equal distance so that their sound arrives at the listening area at the same time, but since this is rarely practical, the AVM 50 can delay the sound coming from speakers that are closer to the listener. This way, sound reaches the listening area at the same time from all speakers, and proper imaging can be achieved.

The speaker with the greatest distance setting will have no delay – speakers with shorter distance settings will be delayed according to their setting.



Units of Measure and Distance Adjustment:
Choose the units you want to use (feet/metres), then enter the distance between your primary listening area and each speaker. Range is 0-99 ft in 0.5 ft increments or 0-99 m in 0.2 m increments.

Speakers set to 'Dipole' in menu 2. SPEAKER CONFIGURATION will automatically have their distance set to equal the greatest distance of any other speaker (see section 3.2).

L-Rear to R-Rear:
ASA is a proprietary THX technology which processes the sound fed to the two surround and two rear speakers to provide an optimal surround sound experience. Choose the setting that corresponds to the spacing between your Rear speakers.

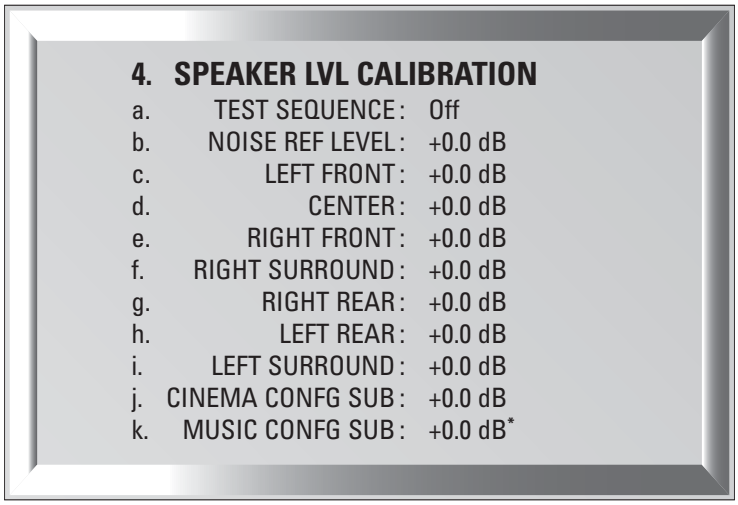
Example: Set Right Front speaker distance to 9.5 feet.

- Enter the Setup Menu. Go to '3. LISTENER POSITION' and press **SELECT**.
- Press the ▼ button until you reach 'd. RIGHT FRONT: 12.0 ft'.
- Use the ◀ ▶ buttons to change to '9.5 ft'.
- When finished, press ▲ ▼ to go to another menu item, or...
- Press **BACK** to leave the submenu and return to the main menu.

3.4 SPEAKER LEVEL CALIBRATION

Speaker Level Calibration uses internal test noises to match the relative level of each speaker at the listening position. Use of noises from home theater setup discs is not recommended – some use incorrect methods.

The FRONTS, CENTER, SURROUNDS, REARS, SUB, and BALANCE buttons on the Front Panel and Remote Control do not affect settings in this menu – they allow 'on-the-fly' adjustment for individual program material and Modes according to personal preference (sections 4.6 and 4.7).



* Item k. is displayed only when 'a. SAME AS CINEMA CONFIG' is set to 'No' in menu 2b.

Test Sequence:
Test noise can be set to travel from speaker to speaker manually using the ▲ ▼ buttons, or automatically in two second intervals by setting TEST SEQUENCE to 'Auto' using the ◀ ▶ buttons and then pressing **SELECT**.

If the previously selected Source is Anlg-Dir, the AVM 50 switches to FM • AM, which is always Anlg-DSP, for the duration of the test noise. ('Anlg-Dir' bypasses the test noise generator.)

Use of a Sound Pressure Level meter is strongly recommended, especially for setting the subwoofer level. Set the meter to 'C-weighted' (if C-weighting is unavailable, set to 'Flat'), and 'Slow' or 'RMS' if available. At the listening position, point the meter upwards, holding it away from your body to prevent reflections.

Noise Reference Level:
This is the 'master volume' control for this menu's test noises – changing this level changes the levels of all channels together. The noise comes out of the Left Front channel. Using the ◀ ▶ buttons, adjust NOISE REF LEVEL so the SPL meter reads 75 dB. If you do not have an SPL meter, skip this adjustment.

Level Calibration of individual channels:
Balances each speaker level to one another. If you're calibrating by ear, use the Remote Control and sit in the primary listening area when adjusting. If using a meter, adjust the level so the SPL meter reads 75 dB for each channel. If you do not listen to music or movies at loud levels, you may prefer an increased subwoofer level – set by ear. Speakers set to 'None' in the Speaker Configuration menu are skipped (see section 3.2).

If Subwoofer is set to 'Super' in menu 2a. (not recommended) or 2b., do not rely on an SPL meter to set subwoofer level – set it by ear while playing various types of source material. Speaker Level Calibration cannot take into account the bass that's added to the subwoofer from speakers set to 'Large', which results in more bass during playback than the calibrated level.

Procedure for Manual Test Sequence:

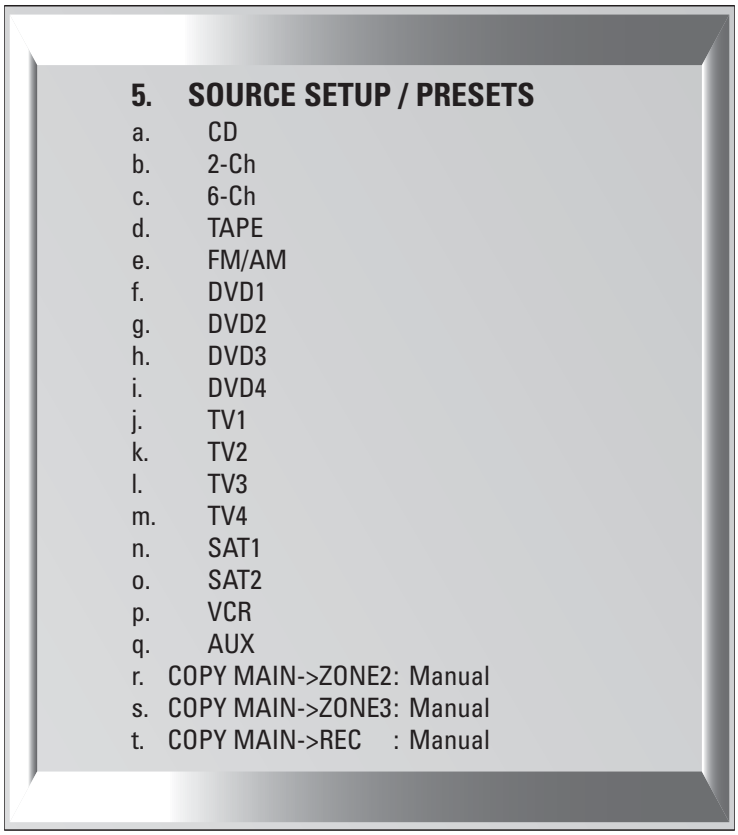
- Enter the Setup Menu. Go to '4. SPEAKER LVL CALIBRATION' and press **SELECT**.
- Use the ◄ ► buttons to set TEST SEQUENCE to 'Manual'.
- Press the ▲ ▼ buttons to go from speaker to speaker.
- As each speaker plays, use the ◄ ► buttons to adjust its loudness relative to other speakers.
- Press **BACK** to stop the test tone.

Procedure for Auto Test Sequence:

- Enter the Setup Menu. Go to '4. SPEAKER LVL CALIBRATION' and press **SELECT**.
- Use the ◄ ► buttons to set TEST SEQUENCE to 'Auto'.
- Press **SELECT** to start the automatic sequence.
- As each speaker plays, use the ◄ ► buttons to adjust its loudness relative to other speakers. Once set, the sequence will automatically advance to the next speaker for adjustment. It will then continue to cycle speaker by speaker to allow you to fine tune all levels.
- Press **BACK** to stop the test tone.

3.5 SOURCE SETUP / PRESETS

This is where you set up each Source and Path according to how you want them to be used.



Copy MAIN to ZONE or REC:
If you want MAIN to always be copied to another Path (see section 4.3), change 'Manual' to 'Always'. This is recommended if you want a Source that only has digital audio output to be used in ZONE2, ZONE3, or REC, or if you want MAIN and another Path to always play the same Source. 'Always' setting is not recommended if you want Source selection to be independent – in this case, see the highlighted part of section 2.2.

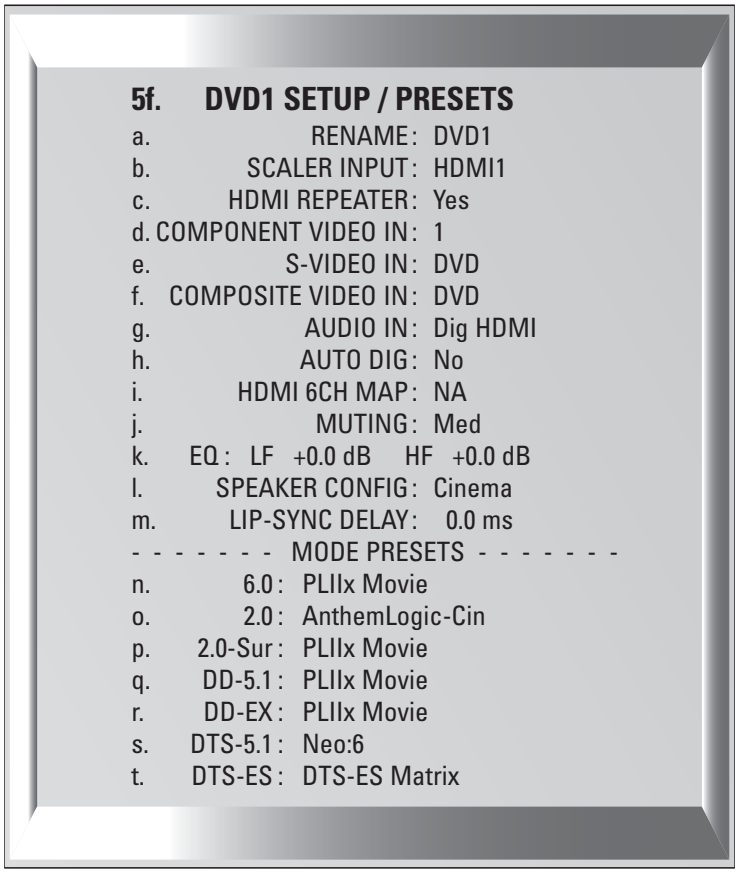
Source Setup:
Besides setup of each source, DVD, TV, and SAT have expanded memory allowing you to set multiple configurations, which are useful for two reasons:

- Use multiple layers for same source, with different video adjustments on each layer, such as aspect ratio control (see section 4.11).
- Use multiple layers with different sources when you have more than nine source components.

To enable DVD2, DVD3, DVD4, TV2, TV3, TV4, or SAT2, at the top of its submenu change SAME AS: "Disabled" to either "Custom" to create its own Source Setup profile, or to any of the other inputs, to use the same Source Setup that they use but so that each layer can have different video adjustments.

Once set up, select a layer either by pressing the Source button one, two, three, or four times, or through the direct-access macros in Appendix A.

Highlighting 'f. DVD1' in menu 5 then pressing **SELECT** displays this menu – the other submenus are similar:



Rename:
The factory assigned Source names that appear on the Front Panel Display and the On-Screen Display can be changed to another name, up to six characters long. The following characters are available:

A, **B**, **C**....**Z**, **a**, **b**, **c**....**z**, blank, dash (–), period (**.**), slash (**/**), **0**, **1**, **2**....**9**, colon (**:**).

After highlighting the RENAME line, press **SELECT** and use the ◀ ▶ buttons to move from character to character, then use the ▲ ▼ buttons or rotate the Master Control Knob to change the character. It is also possible to rename 'ZONE2', 'ZONE3', and 'RECORD' – see section 3.9.

Scaler Input (applies to MAIN only)**:**
Assign which input is used by the video processor when the Source is selected – any HDMI, Component video, S-Video input, or 'None'. Before setting this, be sure that you have read section 2.1. Note that if S-Video is selected, the input connection is the one specified in e. S-VIDEO IN.

HDMI Repeater:
If an HDMI input is assigned correctly yet it doesn't work, try changing this setting to 'No'.

Component, S-Video, Composite Video Inputs:
Assign which video input (or 'None') is used for unprocessed video switching when the Source is selected, including in ZONE2, ZONE3, and REC.

Audio In (applies to MAIN only)**:**
There are three input types to choose from – Digital, Analog-DSP, and Analog-Direct. After highlighting 'AUDIO IN' use the ◂ ▸ buttons to select an input format.

- **Dig** (Digital)**:** Choose from HDMI (possible only if Scaler In is set to HDMI – the same input is used), any coaxial, any optical, or the AES/EBU connection. Any digital input can be assigned to multiple Sources. This allows, for example, two unique Setup/Preset settings for the same DVD player – one for DVDs using the DVD1 Source, and the other for CD music using the CD Source. Note that Dolby Digital and DTS are transmitted only through a digital connection.
- **Anlg-DSP** (Analog with Digital Signal Processing)**:** If you want your subwoofer to play from an analog L/R input, use this setting. Analog input is converted to digital through the AVM 50's high-end A/D converters to enable bass management, time alignment, Mode, Bass/Treble, Lip-Sync Delay, and THX. These are also available for the **6-Ch** input, since it can also be set to Anlg-DSP. With the bass management and time alignment that this provides, the resulting sound quality from DVD-Audio or multichannel SACD is far better than setting the 6-Ch input to Anlg-Dir. If your player has bass management and time alignment, defeat it by setting all channels 'large' and to the same distance. This is necessary when using Anlg-DSP, otherwise the processing occurs twice.
- **Anlg-Dir** (Analog-Direct)**:** A/D conversion and Digital Signal Processing are bypassed, and the preamp plays the traditional role of switching inputs and adjusting levels. There is no subwoofer output in Analog-Direct, except with 6-Ch input and only if the source material has a subwoofer channel recorded in it.

Auto Digital (applies to MAIN only)**:**
When set to 'Yes', the AVM 50 switches to Digital when it senses a digital bitstream and to Analog-DSP when it doesn't. This feature is useful with digital cable boxes that use the digital output for digital channels and analog output for analog channels.

HDMI 6-Channel Map: (applies to MAIN only, for DVD-A format only)**:**
There is no current standard regarding which channel on a DVD-Audio disc comes out of which channel on the preamp when HDMI connection is used between them. If you hear channels coming out of the wrong speakers, change HDMI 6CH MAP to the setting that makes each channel come from the correct speaker.

Muting (applies to MAIN only)**:**
This eliminates 'popping' sounds that may occur with some digital source components during a bitstream change. If popping is heard when changing chapter on a DVD or channel on a digital satellite receiver or cable box, use Max setting. However, if the beginning of a track is cut off when playing a CD, use Min setting.

EQ (applies to MAIN only)**:**
For Sources set to Digital or Anlg-DSP, you can preset low and high frequency levels. This is useful for source components that have frequency irregularities. After highlighting the EQ line, press **SELECT** and use the ◂ ▸ buttons to select LF (low frequency) or HF (high frequency), then use the ▴ ▾ buttons to adjust. In the FM/AM Setup/Presets menu, FM and AM can be adjusted separately. The EQ settings in this menu and the 'on-the-fly' BASS / TREBLE adjustments do not affect each other (see section 4.7).

Speaker Configuration (MAIN only)**:**
Choose between Cinema or Music configuration (section 3.2), or Auto-LFE. When this is selected, the AVM 50 uses the Cinema configuration if there is LFE in the source material, and changes to the Music configuration at all other times. Auto-LFE is recommended when using the same player for DVDs and CDs, and separate Cinema and Music configurations.

Lip-Sync Delay (MAIN only)**:**
Video can fall out of synchronization with audio for a variety of reasons. The AVM 50's video processing causes video to be delayed by 24 milliseconds, which is less than the duration of one frame, thus considered synchronized. If for whatever reason audio is heard before the corresponding image is seen, you can set up to 85 milliseconds of audio delay. You can also set delay while watching video – see section 4.9.

Mode Presets (MAIN only)**:**
When you or another member of your family uses the AVM 50, the Mode and THX presets that are set here are recalled, ensuring trouble-free operation. The presets are applied whenever a Source is selected or MAIN power is turned on. Each type of program material has a separate setting. Presets do not apply to Sources that are set to Anlg-Dir. **If you do not want to have presets, set this to 'Last Used'.**

Use the ▲ ▼ buttons to highlight one of the lines in the menu, then use the ◀ ▶ buttons to scroll through the selections. For complete descriptions of surround modes and when to use them, refer to section 4.8.

Program	Preset Selections
• **6.0**	Select your playback preference for multichannel PCM (via HDMI) and 6-Ch analog input: PLIIx Movie (either with or without THX Cinema), PLIIx Music, Dolby D EX, THX Surround EX, THX Cinema, THX Ultra2 Cinema, THX MusicMode, THX Games Mode, Neo:6 (either with or without THX Cinema), Last Used, or None (see sections 4.8.4 and 4.8.6).
• **2.0**	For stereo input, select any Mode in section 4.8.3, THX Games Mode, or Last Used. Dolby Pro Logic, Pro Logic IIx Movie, and Neo:6 Cinema can be set with or without THX Cinema.
	The following presets apply to Digital inputs only:
• **2.0-Sur**	Separate setting especially for surround-flagged Dolby Digital 2.0 material (section 4.8.2), normally PLIIx Movie but any setting that applies to regular stereo input can also be used.
• **DD-5.1**	Select your playback preference for Dolby Digital 5.1 material: PLIIx Movie (either with or without THX Cinema), PLIIx Music, Dolby D EX, THX Surround EX, THX Cinema, THX Ultra2 Cinema, THX MusicMode, THX Games Mode, Neo:6 (either with or without THX Cinema), Last Used, or None (see sections 4.8.4 and 4.8.6).
• **DD-EX**	For material encoded in Dolby Digital Surround EX: PLIIx Movie (either with or without THX Cinema), PLIIx Music, Dolby D EX, THX Surround EX, Neo:6 (either with or without THX Cinema), Same as DD-5.1, Last Used, or None (see sections 4.8.4 and 4.8.6)
• **DTS-5.1**	For DTS material: Neo:6 (with or without THX Cinema), PLIIx Movie (either with or without THX Cinema), PLIIx Music, Dolby D EX, THX Cinema, THX Ultra2 Cinema, THX MusicMode, THX Games Mode, Last Used, or None (sections 4.8.5 and 4.8.6).
• **DTS-ES**	For DTS-ES: DTS-ES Matrix (with or without THX Cinema), PLIIx Movie (with or without THX Cinema), PLIIx Music, Dolby D EX, Same as DTS, Last Used, or None (see sections 4.8.5 and 4.8.6). Note that for ES Discrete, this setting is overridden and playback is in 6.1.

Example 1: Rename AUX to 'GAME'.

- Enter the Setup Menu. Go to '5. SOURCE SETUP / PRESETS' and press **SELECT**.
- Press the ▼ button until you reach 'q. AUX' and press **SELECT**.
- 'a. RENAME: AUX' will be highlighted in red.
- Press **SELECT**. The first character 'A' will be highlighted in red.
- Use the Master Control Knob or the ▲ ▼ buttons to change characters. Change the first one to 'G'.
- Press the ▶ button to move to the next character. Change it to 'A'.
- Use the ◀ ▶ buttons to move to each remaining character. Change to 'M' and 'E'.
- Press **BACK** to leave the submenu and return to the main menu.

Example 2: Change SAT1 Digital Input from coaxial to optical.

- Make sure satellite receiver is connected to OPT1 and playing.
- Enter the Setup Menu. Go to '5. SOURCE SETUP / PRESETS' and press **SELECT**.
- Press the ▼ button until you reach 'n. SAT1' and press **SELECT**.
- Press the ▼ button until you reach 'g. AUDIO IN: Dig Coax SAT' and press **SELECT**.
- 'Coax SAT' will be highlighted. Use the ▲ ▼ buttons to change to 'OPT1' (sound will now be heard).
- Press **BACK** to leave the submenu and return to the main menu.

Example 3: Adjust TAPE Source Equalization.

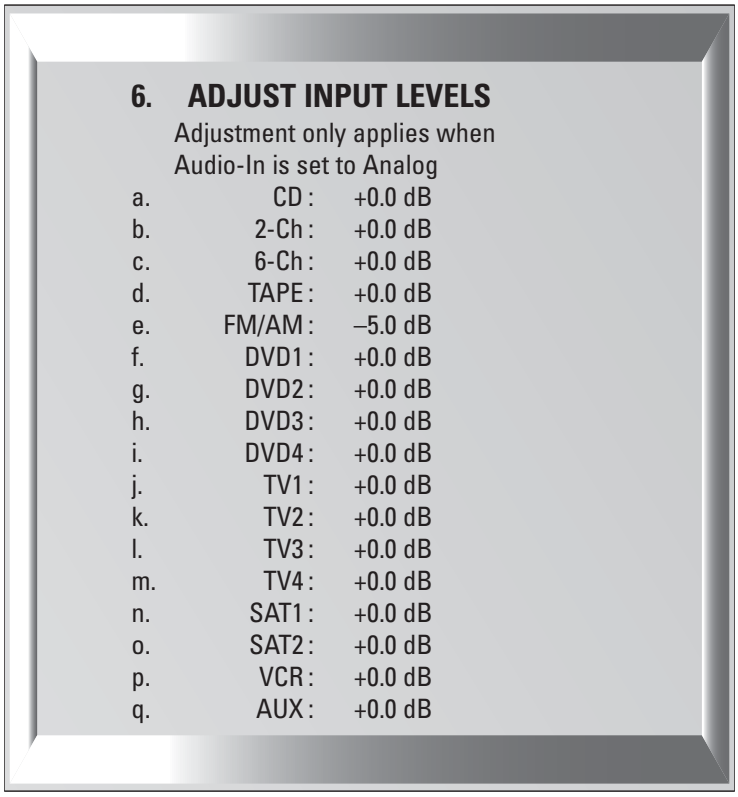
- Make sure TAPE source component is connected to Analog Inputs and playing.
- Enter the Setup Menu. Go to '5. SOURCE SETUP / PRESETS' and press **SELECT**.
- Press the ▼ button until you reach 'd. TAPE' and press **SELECT**.
- Press the ▼ button until you reach 'c. EQ' and press **SELECT**.
- Use the ◀ ▶ buttons to move to 'LF' or 'HF'. Use the ▲ ▼ buttons to adjust.
- Press **BACK** to leave the submenu and return to the main menu.

Example 4: Set DVD1 Lip-Sync Delay to 24 milliseconds.

- Enter the Setup Menu. Go to '5. SOURCE SETUP / PRESETS' and press **SELECT**.
- Press the ▼ button until you reach 'f. DVD1' and press **SELECT**.
- Press the ▼ button until you reach 'm. LIP-SYNC DELAY' and press **SELECT**.
- Use the ◀ ▶ buttons to move from digit to digit and the ▲ ▼ buttons to adjust to '24 ms'.
- Press **BACK** to leave the submenu and return to the main menu.

3.6 ADJUST INPUT LEVELS

For Sources set to Anlg-DSP or Anlg-Dir in menu 5, you can match input levels in MAIN to each other so there are no large changes in volume as you change Sources. This is also where recording level is set when using the AVM 50 as an analog-to-digital converter (see sections 3.5, 3.7, and 4.3).



If a source that is set to Analog-DSP is playing while you adjust the Input Level, you will notice a vertical bar graph to the left of the dB setting. With the On-Screen display, this Bar Graph changes from green to pink, to warn that there is 6 dB of headroom left. With pop music material, an occasional transition into the pink region does not necessarily mean that the input is overloaded. If the bar graph stays pink constantly, reduce the level until the bar graph becomes green for the most part.

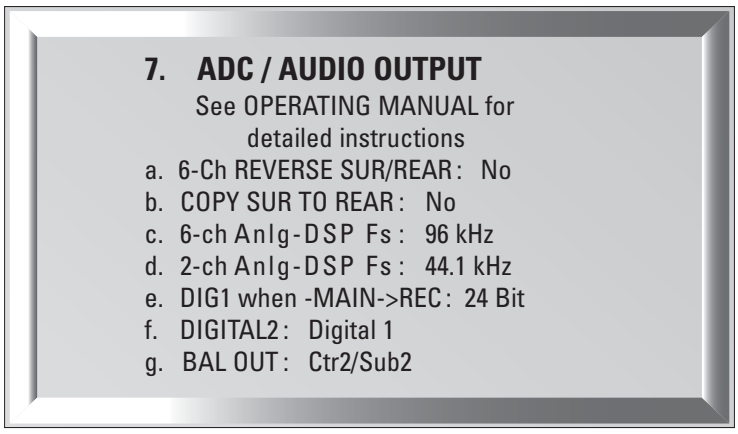
Before making changes or adjustments in this menu, have all connected source components playing similar music material. Then, as you switch through each highlighted Source, you will hear that component play. This lets you know that each component is connected to the AVM 50, and it also allows for easy comparative level adjustments of analog sources. Remember, adjusting input levels only functions with Sources set to Analog in menu 5, and the bar graph only works with Analog-DSP setting.

Example: Adjust TAPE Input Level.

- Make sure a source component is connected to TAPE Analog L/R Input and playing.
- Enter the Setup Menu. Go to '6. ADJUST INPUT LEVELS' and press **SELECT**.
- Press the ▼ button until you reach 'd. TAPE: +0.0 dB'.
- Press **SELECT**. '+0.0 dB' will be highlighted in red.
- Use the ▲ ▼ buttons to change the Level.
- When finished, press **BACK** and then ▲ ▼ to go to another Source, or...
- Press **BACK** to leave the submenu and return to the main menu.

3.7 ADC / AUDIO OUTPUT

In the ADC / Audio Output menu you can re-configure the Surround and Rear channels, set analog to digital conversion parameters for the digital Record output, and configure the balanced analog outputs.



Reverse Surrounds/Rears:
If you're using a 7.1 speaker system and want to use the Rear speakers instead of the Surrounds when the 6-Ch input is selected, set REVERSE SUR/REAR to 'Yes' and **re-connect the AVM 50 as follows:** Surround outputs on the AVM 50 to the Rear inputs on your amplifier, and the Rear AVM 50 outputs to the Surround amplifier inputs. The 6-Ch Surround inputs will now play through your Rear speakers. The AVM 50 flips the SUR/REAR channels back to normal whenever a mode with 6.1 or 7.1 output is turned on for the 6-Ch input or when any other input is selected.

Copy Surrounds to Rears:
When playing material or using a Mode that has Surround channel information but no Rear information, setting this to 'Yes' plays the Surround channel out of both sets of speakers.

Sampling Frequency (Fs):
When a Source that is set to Anlg-DSP is copied from MAIN to RECORD, the analog signal is converted to digital using the AVM 50's high-end A/D converters, and sent to DIGITAL1. This is useful for recording analog music on a CD burner or computer with S/PDIF input on the sound card. You can select from 44.1, 48, 88.2, or 96 kHz sampling rates. Recording level is set by the input level in menu 6 (see sections 3.6 and 4.3).

This is also the signal processing rate for MAIN. **Neo:6 does not function when '2-Ch Anlg-DSP Fs' is set to 88.2 kHz or 96 kHz**, therefore leave this set to 44.1 or 48 kHz unless a recording is being made, and then use 48, 88.2, or 96 kHz only if the equipment connected to DIGITAL1 and DIGITAL2 is capable of accepting those sampling rates – audio CD burners can not.

For the 6-Ch input, a separate setting is used so that bass management, time alignment, Mode, Bass/Treble, Lip-Sync Delay, and THX can be performed at the same high resolution that DVD-Audio and SACD provide. When 6-Ch is copied from MAIN to RECORD, the DIGITAL1 output is a 2-channel downmix.

Bit Rate of DIGITAL1 when MAIN is copied to REC**:**
Choose from 16 or 24 bit output, to match the recorder. At 16 bits, dither is added to improve low level signals.

Output of DIGITAL2:
Set it to have the same output as DIGITAL1, or a fixed output from any Source set to Digital (DVD1, SAT1, etc.). DIGITAL1 and DIGITAL2 transmit data from digital sources in the same format it comes in – if it's Dolby Digital or DTS encoded, it stays that way and can be linked to other digital equipment.

Balanced Output:
If the Balanced CENTER2 and SUB2 outputs are not in use for a second Center channel or Subwoofer in MAIN, they can be used as Balanced ZONE2 L/R outputs (see section 3.2.5).

3.8 VIDEO OUTPUT

In this menu, enter the characteristics of your display's video input. Items a. through g. pertain to MAIN output. Using item h. you can also configure the second Component video output for ZONE2 video switching.

Changes do not take place immediately to prevent loss of On-Screen display as you scroll through settings. Once you leave this menu, it asks for confirmation – use the ◂ ▸ buttons to change to 'Yes', then press **SELECT**. To put a change into effect immediately, press **SELECT**, then confirm.

If current settings do not work with your display, use the Front Panel display to view the Setup until making appropriate selections.

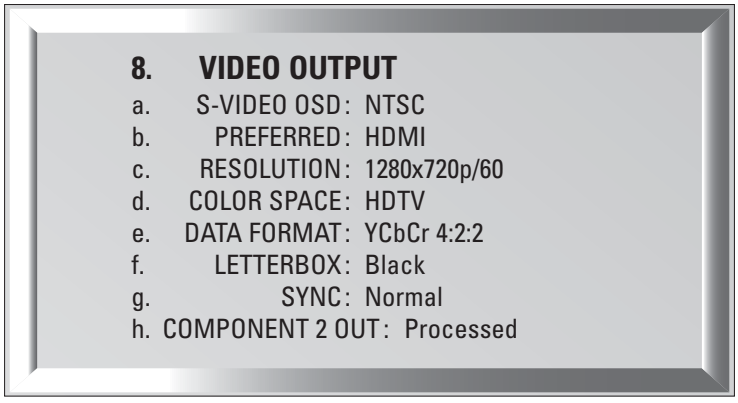
Video settings can also be made through a program named Live Video Settings Editor, downloadable from our web site. In addition to allowing setup via computer and file creation for video adjustments described in section 4.11, LVSE provides advanced settings – gamma correction (single or separate RGB curves) and custom output resolution and timing. Advanced settings are meant for use by calibration professionals, therefore instructions for setting them are not included here.

Where possible, **disable all video processing in your source components** so that the AVM 50's advanced processing can be used to its potential.

For standard-def DVD, set the player's output to 480i/576i, because if its output is progressive-scan, you will be looking at the player's deinterlacing, not the AVM 50's. If the player does not allow 480i/576i HDMI output, **using 480i/576i component video output may be best.** If the player can be set to put out both 480i (NTSC) and 576i (PAL) according to source material, you can use this setting since the AVM 50 accepts both formats.

If your HD cable/satellite receiver has 'native' mode where output resolution follows each station's resolution, use it. If not, set the receiver's output according to the HD channels that you watch the most.

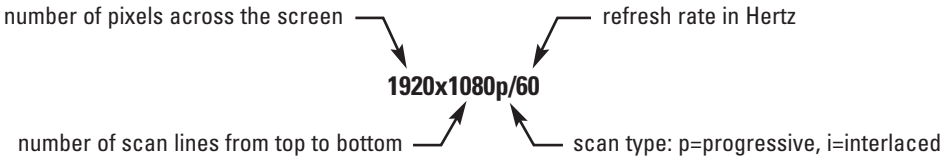
If your display allows, you can set it to 1:1 pixel or 'dot-for-dot' mode to bypass its scaling, although setting resolution in menu 8 to match your display's native rate normally bypasses the display's scaling.



S-Video On-Screen Display Format:
Select NTSC or PAL, whichever matches your display. If your display supports both formats, try NTSC first.

Preferred Video Output:
Select Component or HDMI – the video will be optimized for that type. The other output may or may not produce a usable picture – this depends on the remaining settings. HDMI-only settings in the rest of this menu will not be shown if Component is selected. If your settings apply to both HDMI and Component output, both will work simultaneously unless the source material's copy protection prevents this (see section 2.1).

Output Resolution:
Input from S-Video, Component, and HDMI is scaled to this resolution for Component and HDMI output. If interlaced to progressive scan conversion is in effect, it is uncompromisingly pixel-adaptive **even with 1080i**, and the same robust film mode detection applies as with any other input. Resolution is expressed as follows:



From the list below, use the output resolution that gives the best picture quality on your display. Note that HD displays often require either 1280x720p or 1920x1080i regardless of their native resolution.

Standard- and Hi-Definition TV:	**Computer Monitors:**	**Other:**
720x480i at 60 Hz	VGA (640x480p) at 60/75/85 Hz	640x350p at 85 Hz
720x480p at 60 Hz	SVGA (800x600p) at 60/75/85 Hz	640x400p at 85 Hz
720x576i at 50 Hz	XGA (1024x768p) at 60/75/85 Hz	1280x768p at 60 Hz
720x576p at 50 Hz	SXGA (1280x1024p) at 60/75/85* Hz	1360x768p at 60 Hz
1280x720p at 50/60 Hz	UXGA (1600x1200p) at 60* Hz	1366x768p at 60 Hz
1920x1080i at 50/60 Hz		1152x864p at 75 Hz
1920x1080p at 24/25/30/50*/60* Hz		1366x923p at 50 Hz
Auto[§]	*high-bandwidth cable is required	1280x960p at 60/85* Hz

Color Space:
Set this to match your display type: HDTV (high definition TV), SDTV (standard definition), or Auto[§].

Data Format:
Select YCbCr 4:2:2, YCbCr 4:4:4, RGB, Extended RGB, or Auto[§] – whichever looks best. Note that when YCbCr is selected, the HDMI output uses YCbCr format and Component output uses YPbPr.

Use dark areas of a scene to determine whether YCbCr 4:2:2 vs 4:4:4, or standard vs extended RGB is the correct setting. **If colors look totally wrong with all sources, try all settings before calling tech support. If colors look wrong only when certain sources are selected, see section 4.11.**

§'Auto' setting: Works with most displays, but you may get a better result selecting the format manually.

Letterbox:
When the source material's aspect ratio (the proportion of image width to height) does not match the display's aspect ratio, and you want to preserve the original image's proportions, the unused areas of the screen will be blank. You can select the shade of these areas, from ten levels between light gray and black. If you do not want letterbox (bars on top/bottom) or pillarbox (sidebars) on your screen, see section 4.11.

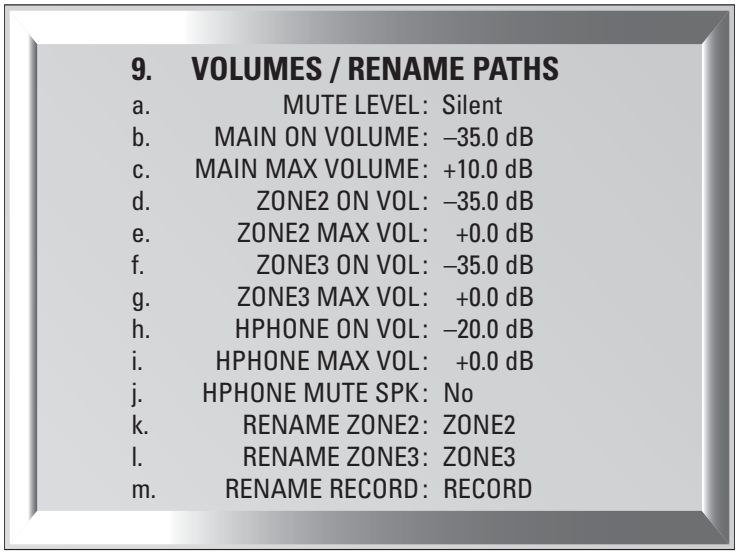
Synchronization:
Try 'Inverted' setting if the image via HDMI is either not centered on the screen or does not show at all.

Component 2 Out:
The second Component video output can be configured in one of the following three different ways, or 'Off':

- MAIN output, processed (same signal as Component 1).
- MAIN output, unprocessed. Use this if you have, for example, a front projector to watch movies connected to Component 1 or HDMI output, and a flat panel to watch the news connected to Component 2 output, and the flat panel cannot accept the format being sent to the projector. Note that On-Screen display is not available.
- ZONE2 output (i.e. when Source is selected in ZONE2), unprocessed.

3.9 VOLUMES / RENAME PATHS

This menu allows you to define the power-on volume settings, set whether or not MAIN outputs shut off when headphones are used, and to rename ZONE2, ZONE3, and RECORD.



Mute Level:
When MUTE is pressed, sound can cut out completely, or decrease in volume by the amount that you set to keep some of it in the background – select from 'Silent', or –5 to –30 dB in 5 dB steps.

Power-On Volume:
When you turn MAIN, ZONE2, or ZONE3 on, or plug in your headphones, the volume for each will come on at the known levels you have set in this menu. This avoids any potential 'surprises' of not knowing the volume someone had set when turning the AVM 50 off, and then having the power-on volume be either too loud or quiet. You can set independent volumes for MAIN, ZONE2, ZONE3, and HEADPHONE.

Maximum Volume:
These settings allow you to individually limit the volume of MAIN, ZONE2, ZONE3, or HEADPHONE to avoid damaging your equipment and/or your ears. This can also serve as a parental volume control feature. The range of settings available for MAIN is from –95.5 dB to +31.5 dB in steps of .5 dB, and for ZONE2, ZONE3, and HEADPHONE, the range is from –70.0 dB to +10.0 dB in 1.25 dB steps.

To set a fixed output for ZONE2 or ZONE3, scroll MAX VOL past +10.0 dB to set 'LockOnVol' and then set the desired fixed output level in ON VOL. When the Path is on, 'Lock' is displayed beside the volume readout to indicate that its volume cannot be changed with the volume control.

Headphone Mutes Speakers:
Determines whether or not the MAIN speakers turn off when headphones are plugged into the Front Panel:

- **'Yes'** The MAIN speakers mute. "HPHONE" is displayed instead of "MAIN" to indicate that adjusting Volume, Bass, Treble, and Balance affect HEADPHONE only.
- **'No'** MAIN speakers continue to play when headphones are plugged in. (To make headphone adjustments see sections 4.2 to 4.7.)

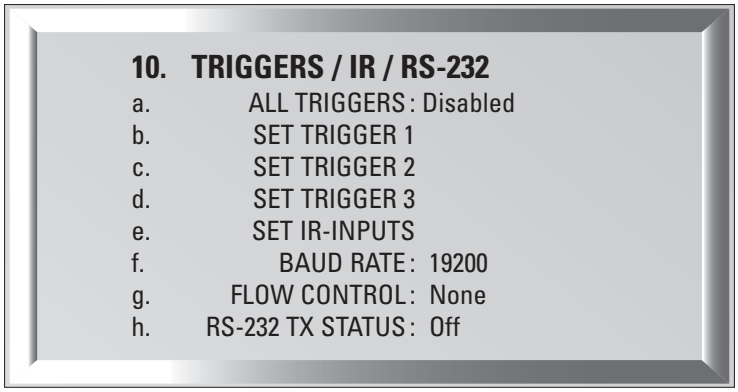
Rename Path:
The factory assigned Path names that appear on the Front Panel and On-Screen displays can be changed to another name up to six characters long – procedure is the same as Rename Source (section 3.5).

3.10 TRIGGERS / IR / RS-232

When a trigger output on the AVM 50 is connected to the trigger input of another component, such as a power amplifier or video projector, the AVM 50 can turn the component on or off according to the trigger's Setup. For components that do not use triggers, a triggerable power bar may work (see your dealer).

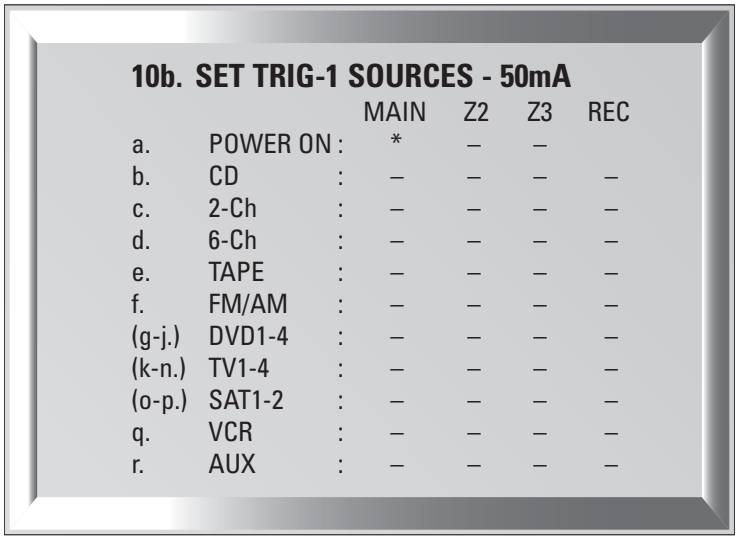
- **Trigger1** and **Trigger2:** Provide standard trigger output of 12 volts with up to **50 mA** of current, suitable for most amplifiers.
- **Trigger3:** Provides an output of 12 volts with up to **200 mA** of current, suitable for most amplifiers and depending on requirements, usable with motorized projection equipment.

There is a quarter of a second delay between each trigger to minimize momentary line voltage drops caused by switching on too many devices at the same time.



All Triggers:
When on 'Disabled' all triggers remain off. When on 'Enabled' the trigger chart below is used to set conditions. For custom installations, 'RS-232 Ctrl' uses external control over all triggers.

Set Trigger:
Highlighting 'b. SET TRIGGER 1' and then pressing **SELECT** displays this menu – in the example shown, TRIGGER 1 activates whenever MAIN power is turned on:

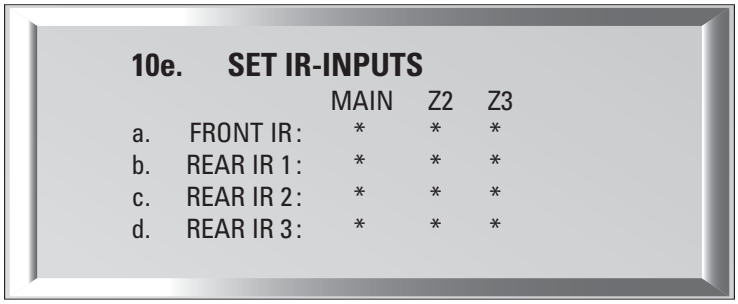


Under each of the four Paths, notice that there are dashes ('–'). After highlighting POWER ON or a Source, press **SELECT** and use the ◀ ▶ buttons to move from one Path to another, and then to set the trigger to activate, use the ▲ ▼ buttons to change the '–' to a '*****' (don't forget: a. ALL TRIGGERS: 'Enabled' in menu 10).

Changes to the trigger setup do not take effect until the Setup Menu is exited completely, to avoid unnecessary rapid turning off and on of triggers while changes are being made.

Set IR Inputs:
This allows you to enable or disable the AVM 50's infra-red inputs. Being able to do so can be useful when an IR receiver, connected to the AVM 50, is located in the same room as the AVM 50. In such a case, the AVM 50 can receive two IR signals for the same command – one through the front, and one through the back. The potential result is that whatever you're trying to command may not respond. Disabling the Front IR solves this problem.

In rare situations, the IR signal may find its way to the internally mounted IR receiver through the vents in the top cover. This could also cause IR commands to be intermittent or ineffective. If the Rear IR inputs are not in use, simply disable them to prevent any potential problems.



After highlighting an IR input, press **SELECT** and use the ◂ ▸ buttons to move from one Path to another. To turn the input off, use the ▴ ▾ buttons to change the '*****' to a '–'. Do this through the Front Panel, since Remote Control commands are ineffective once an IR sensor is turned off.

If the AVM 50 does not respond to Remote Control commands, enter the Setup using the Front Panel buttons, go to menu '10. TRIGGERS/IR/RS-232', followed by 'e. SET IR-INPUTS', and make sure the FRONT IR settings are set to '*****'. **Try this before contacting technical support (see also section 5.6).**

Baud Rate and Flow Control:
The Baud Rate (adjustable from 1200 to 115200 bps), and Flow Control ('RTS', 'CTS', or 'None'), allow configuration of the serial port communication parameters (normally for use only by custom installers).

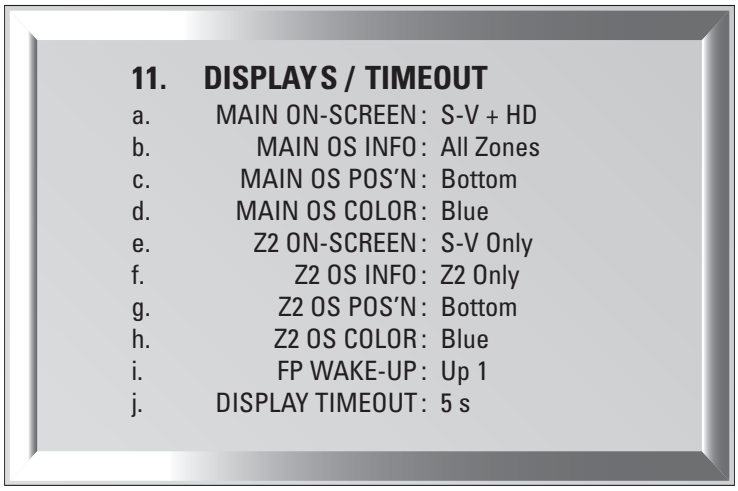
RS-232 TX Status:
When 'On', all commands, status changes, and control information are echoed through the RS-232 port (normally for use only by custom installers).

Example: Activate Trigger1 when DVD1 is selected in MAIN.

- Enter the Setup Menu. Go to '10. TRIGGERS/IR/RS-232' and press **SELECT**.
- Upon entering this menu item, 'a. ALL TRIGGERS: Disabled' will be highlighted in red.
- Use the ◂ ▸ buttons to change to 'Enabled'.
- Press the ▾ button to go to 'b. SET TRIGGER 1. Press **SELECT**.
- Use the ▴ ▾ buttons to go to 'DVD1'. Press **SELECT**.
- Use the ▴ ▾ buttons to change the '–' to '*****'.
- Press **BACK** twice to leave this submenu.

3.11 DISPLAYS / TIMEOUT

This menu allows you to configure On-Screen display, Front Panel display, and Selection Time.



Main / Z2 On-Screen:
Lets you select the outputs that receive the On-Screen display, or 'Bypassed', which turns the On-Screen display off. If you choose 'Bypassed', you will have to rely on the Front Panel display. If you are using S-Video inputs and prefer the appearance of the HD characters, select HD Only – the HD characters will be used if a video signal is present.

On-Screen display is not available for Composite video or ZONE2 Component video.

Main / Z2 OS Info:
From here, select the Path adjustments that are shown by the MAIN or ZONE2 On-Screen displays. For example, if ZONE2 is set up with an IR repeater for the Remote Control, and you are using the AVM 50 in the MAIN room, you may not want to be disturbed by information about adjustments made in ZONE2 by someone else. In a different situation, you may want to see the ZONE2 information, for example, while adjusting ZONE2 yourself from the MAIN room.

Main / Z2 OS Position:
Allows you to position the On-Screen display to reduce the chance of it interfering with the on-screen display positions of other video components (e.g. satellite receiver's status info). Choose from: 'Bottom', 'Mid', or 'Top'.

Main / Z2 OS Color:
If the On-Screen display of the Setup Menu appears unstable, it could be that your display is not synchronizing to the blue (factory default) background color. You can change the background color to one that your display can synchronize to – black and magenta are also available.

Front Panel Wake-Up:
If Display is set to Medium, Low, or Off, it can be made to change to a brighter level while you make any adjustment, to either one level higher or Hi – choose 'None', 'Up 1', or 'Hi'. When 'None' is chosen and the Display is Off, it will behave as if set to 'Up 1' to prevent confusion as to whether the power is on or off.

Display Timeout:
This is the time that elapses after an adjustment is made in any Path. After that, On-Screen text disappears, the Front Panel becomes dim, and the regular MAIN display returns. Adjustable from 1 to 15 seconds.

Example: Set the position of the MAIN On-Screen information to the middle of the display.

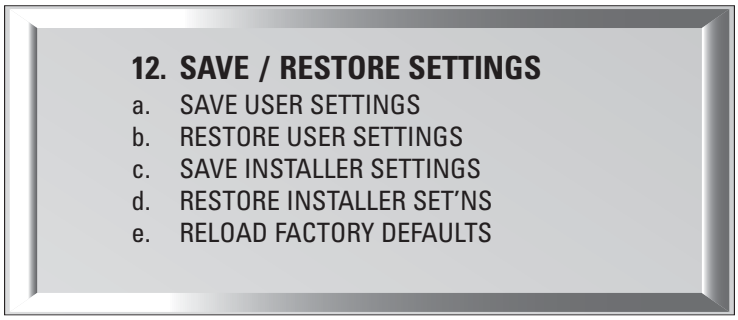
- Enter the Setup Menu. Go to '11. DISPLAYS/TIMEOUT' and press **SELECT**.
- Press the ▼ button until you reach 'c. MAIN OS POS'N: Bottom'.
- Use the ◀ ▶ buttons to change to 'Middle'.
- When finished, press ▲ ▼ to go to another menu item, or...
- Press **BACK** to leave the submenu and return to the main menu.

3.12 SAVE / RESTORE SETTINGS

The AVM 50 enables you to save your entire Setup configuration. Two separate save files are provided: USER SETTINGS and INSTALLER SETTINGS. If your system is set up by your dealer, the configuration can be saved in the INSTALLER file by the dealer. You can then make further Setup adjustments – save those settings separately in your own USER file. FM • AM presets are also saved separately in USER SETTINGS and INSTALLER SETTINGS.

If someone makes unwanted changes to the Setup Menu of your AVM 50, you can quickly and easily restore either the dealer's INSTALLER settings or your USER settings, thereby preventing the need to run through the Setup procedure all over again. FM•AM presets saved in USER SETTINGS or INSTALLER SETTINGS will also be restored.

The original FACTORY DEFAULTS can also be reloaded at any time to reset the AVM 50 to the factory settings. As well, surround mode level, balance and bass/treble adjustments described in sections 4.6 and 4.7 will be reset to 0 dB, and Mode settings described in section 4.8 will be reset to 'None' for all Sources.



Save Settings:
You can save settings with or without the use of a Password. Passwords are very easy to set up (see section 3.13) and will protect both USER and INSTALLER files from being changed by anyone who doesn't have the Password. **New saves will overwrite the previously saved file**. The AVM 50 will prompt you to confirm that you want to over-write currently saved settings – press **BACK** at this point to abort a save.

Restore or Reload Settings:
You may RESTORE USER SETTINGS, INSTALLER SETTINGS, or RELOAD FACTORY DEFAULTS at will. The AVM 50 will prompt you to confirm that you want to replace the current settings – press **BACK** at this point to abort a restore.

Example 1: Save User Settings.

FM•AM Tuner presets will also be saved in USER SETTINGS.

- Enter the Setup Menu. Go to '12. SAVE/RESTORE SETTINGS' and press **SELECT**.
- Upon entering this menu item, 'a. SAVE USER SETTINGS' will be highlighted in red.
- Press **SELECT**. You will be asked to confirm that you want to over-write current settings.
- Use the ◂ ▸ buttons and change to 'Yes'. If you are using a Password (section 3.13), you will be asked for it. Use the **0** – **9** buttons to enter your Password. The On-Screen display message will then say 'Saving Successful', the Front Panel display will say 'Done!'.
- When finished, press ▴ ▾ to go to another menu item, or...
- Press **BACK** to leave the submenu and return to the main menu.

Example 2: Restore Installer Settings.

FM•AM Tuner presets that were saved in INSTALLER SETTINGS will also be restored.

- Enter the Setup Menu. Go to '12. SAVE/RESTORE SETTINGS' and press **SELECT**.
- Press the ▾ button until you reach 'd. RESTORE INSTALLER SET'NS'.
- Press **SELECT**. You will be asked to confirm that you want to restore installer settings.
- Use the ◂ ▸ buttons to change to 'Yes' and press **SELECT**. On-Screen display message will then say 'Installer Settings Restored', the Front Panel display will say 'Done!'.
- When finished, press ▴ ▾ to go to another menu item, or...
- Press **BACK** to leave the submenu and return to the main menu.

Example 3: Reload Factory Defaults.

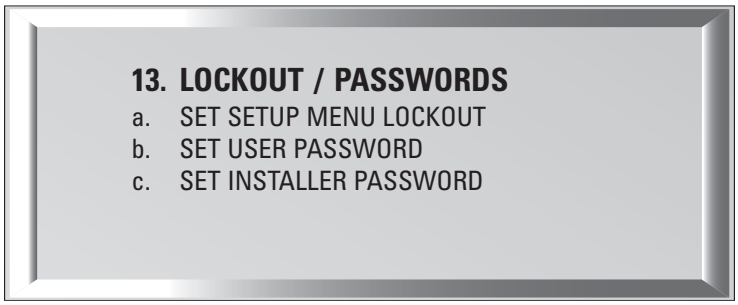
The current time and FM•AM Tuner presets will be retained. Surround mode level, balance, bass/treble adjustments (sections 4.6 and 4.7) will be reset to 0 dB.

- Enter the Setup Menu. Go to '12. SAVE/RESTORE SETTINGS' and press **SELECT**.
- Press the ▾ button until you reach 'e. RELOAD FACTORY DEFAULTS'.
- Press **SELECT**. You will be asked to confirm that you want to 'reload factory settings'.
- Use the ◂ ▸ buttons to change to 'Yes' and press **SELECT**. On-Screen display message will then say 'Factory Defaults Reloaded', the Front Panel display will say 'Done!'.
- When finished, press ▴ ▾ to go to another menu item, or...
- Press **BACK** to leave the submenu and return to the main menu.

To clear all adjustments described in sections 4.6 and 4.7, save User Settings, then reload Factory Defaults, then restore User Settings. The Setup Menu will remain as it was. If certain channels don't sound as loud as they should under certain conditions, and you have already calibrated levels according to section 3, **try this before contacting technical support**. The cause may just be a forgotten adjustment, or an adjustment that someone else made and didn't tell you. **Happens sometimes!**

3.13 LOCKOUT / PASSWORDS

Passwords are used to protect the saved User and Installer settings. Once you have set a password, it can also be used as a Lockout to prevent settings from being changed by anyone without one of the passwords.



Set Setup Menu Lockout:
When set to 'Yes', this prevents anyone without a password from entering the Setup. When you attempt to enter the Setup, you will be asked for your Password – either the USER or INSTALLER Password must then be entered from the Remote Control before you will be allowed to continue.

Set User or Installer Password:
When setting the USER or INSTALLER Password, you will be asked to enter a four digit number. Pick one that you will remember easily. To enter that number, use the **0 – 9** keys on the Remote Control (password cannot be entered from the Front Panel). To change an existing password, enter the old one first, then enter (and confirm) the new one. Write it down in case it's forgotten in the future!

Example 1: Set User Password (Remote Control only).

- Enter the Setup Menu. You must enter the USER or INSTALLER Password if there is one.
- Go to '13. LOCKOUT/PASSWORDS' and press **SELECT**.
- Press the ▼ key to go to 'b. SET USER PASSWORD'.
- Press **SELECT**. You will be asked to enter a four digit number. Use the **0 – 9** keys to do so. If you are changing your Password you will be asked to enter your old Password first. You will also be asked to confirm your new Password (re-enter your new Password).
- When finished, press ▲ ▼ to go to another menu item, or...
- Press **BACK** to leave the submenu and return to the main menu.

Clearing the User Password: When asked for your new Password, press the ▶ key four times. You will also be asked to confirm your new Password – press the ▶ key four times again. Message will then say 'User Password Removed'.

Example 2: Set Setup Menu Lockout.

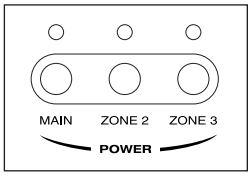
- Enter the Setup Menu. Go to '13. LOCKOUT/PASSWORDS' and press **SELECT**.
- Upon entering this menu item, 'a. SET SETUP MENU LOCKOUT' will be highlighted in red.
- Press **SELECT**. You will be asked to enter your Password. Either the USER or INSTALLER Password will work. Use the **0 – 9** keys to do so.
- Use the ◀ ▶ buttons to change to 'Yes' or 'No'.
- Press **SELECT** or **BACK.**
- When finished, press ▲ ▼ to go to another menu item, or...
- Press **BACK** to leave the submenu and return to the main menu.

4. OPERATION

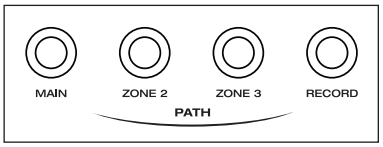
4.1 POWER ON/OFF

When turned on, the AVM 50 comes on at the pre-programmed volume setting (see section 3.9). **Always turn the power amplifier on last to prevent 'turn-on pops' when other components are turned on.**

Front Panel – Power ON Main
Choose one of the following:



- Press **MAIN** in the POWER group, or...
- Press **MAIN** in the PATH group, or...
- If ZONE2 and ZONE3 are off, press any **SOURCE** button, FM • AM preset (**1** through **6**), or **TUNE**.



Front Panel – Power ON a Zone

- Press **ZONE2** or **ZONE3** in the POWER or PATH group.

Front Panel – Power OFF Main or a Zone

- Press **MAIN** or **ZONE2** or **ZONE3** in the POWER group.

Remote Control – Power ON

- Make sure the appropriate control mode is set (**MAIN**, **Z2**, or **Z3** in the SSP PATH group) then press **POWER**.

Remote Control – Power OFF

- Make sure the appropriate control mode is set then press **SSP OFF**.

4.2 PATH SELECTION

Path routes Sources to the MAIN, ZONE2, ZONE3, or RECORD outputs.

- **MAIN:** As the name suggests, MAIN routes the audio/video sources to your main listening/viewing room, with outputs for your MAIN display and 7.1-channel audio.
- **ZONE2** and **ZONE3:** Routes any audio/video source to other listening/viewing rooms in your home. The chosen Source can be either the same or different from the Source selected in other paths. ZONE2 and ZONE3 each have outputs for a TV and 2-channel audio. **To listen to a Source that doesn't have L/R Analog Audio-In connected, you must 'copy' it from MAIN (see section 4.3).**
- **RECORD:** Allows you to record audio/video sources independently of what is selected in other paths. Composite and S-Video, and fixed-level analog audio outputs are available for your tape recorder and VCR. In addition, there are two configurable coaxial digital outputs: DIGITAL1 can be set to put out the audio of any digital Source, or convert an analog Source to digital (must be set to Anlg-DSP in the Setup). DIGITAL2 can be set to put out the same signal as DIGITAL1, or any of the Sources set to Digital. Refer to sections 3.5 and 3.7 for an explanation on how to set input and output formats. **As with Zones 2 and 3, RECORD has output only if L/R Analog Audio-In is connected, or when MAIN is 'copied' (see section 4.3).**

  Remote control – the **REC** PATH key is near the bottom of the remote control.

The displayed Path returns to MAIN a few seconds after an adjustment is made in ZONE2, ZONE3, RECORD, or HEADPHONE*. This is designed to prevent accidents. For example, if someone in the MAIN room wants to turn up the volume there, and the Path is in ZONE2, the volume would increase in ZONE2, not MAIN. Since the person adjusting the volume doesn't hear the change, chances are that he or she would keep turning up the volume in ZONE2, unaware of what's happening there, like Peter Sellers in "The Party" except maybe not quite as hilarious. The timeout setting can be changed in the Setup (see section 3.11).

* Except when MAIN is off or HEADPHONE is set to 'Mute' the MAIN speakers (see section 3.9).

4.3 MANUALLY COPYING THE MAIN PATH TO ZONE2, ZONE3, OR RECORD

When Main is copied to another Path, the Source selected in MAIN is directed to ZONE2, ZONE3, or RECORD from either analog or digital inputs.

If a source component's audio is connected to the AVM 50 using digital connection only, then the Copy function is the only way to deliver the sound to another Path.

Front Panel
Press **MAIN** simultaneously with **ZONE2**, **ZONE3**, or **REC**. Use MAIN to select the Source.

Remote Control
Make sure the appropriate control mode is set, or **REC** Path is selected, then press **COPY**.

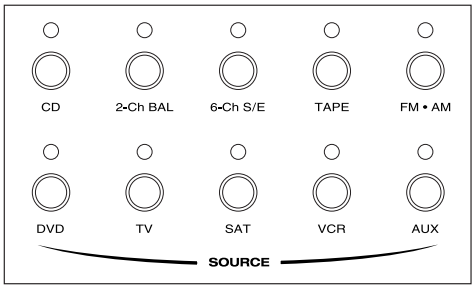
When MAIN is copied, the display for the other Paths reads "–MAIN–> ZONE2" (or ZONE3 or REC), along with the information normally displayed. **Copy can also be set permanently – see section 3.5.**

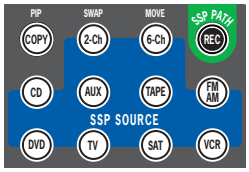
Down-Mixing to 2-Channel Stereo:
The Center, Surround, and Rear channels can be mixed into the Left and Right Channels for the ZONE2, ZONE3, TAPE, and VCR outputs. This can be done by the DVD player or the AVM 50:

- **AVM 50 Down-mix:** If the digital audio output from your DVD player is connected to the AVM 50, the AVM 50 down-mixes 5.1 channels into 2.0 whenever you copy MAIN to another Path. This applies whether the input is, Dolby Digital, DTS, or 6-Ch input.
- **DVD Player Down-mix:** If the Left/Right analog outputs from your DVD player are connected to the AVM 50's Analog Audio-In, the Dolby Digital down-mix done by your DVD player can be used for ZONE2, ZONE3, TAPE, and VCR outputs, without having to copy MAIN. Note that DVD players do not normally provide a down-mix for DTS material.

4.4 SOURCE SELECTION

After making sure that you are in the appropriate Path (Front Panel) or appropriate control mode is set (Remote Control), select a Source.





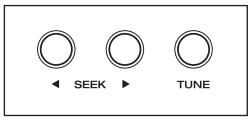
6-Channel Analog Audio Input:
The 6-Ch audio can be routed to ZONE2, ZONE3, and RECORD outputs as long as Copy mode, which creates the stereo down-mix, is used (see section 4.3).

Source Seek (Remote Control Only)**:**
The SOURCE SEEK ◀◀ ▶▶ keys detect the previous/next active Source, while the ▶ key advances one Source at a time. To increase seeking speed, set all unused HDMI and Component video inputs to 'None' (see section 3.5).

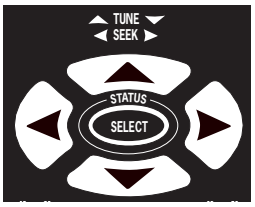
4.4.1 FM•AM TUNER

The AVM 50 has a built-in FM•AM tuner, which is common to all Paths. The station that is selected in either MAIN, ZONE2, ZONE3, or RECORD is shared with all other Paths.

Manual Tuning:
After selecting the desired band by pressing **FM • AM**, use the ▲ ▼ buttons (Remote Control) or press **TUNE** and rotate the Master Control Knob (Front Panel).

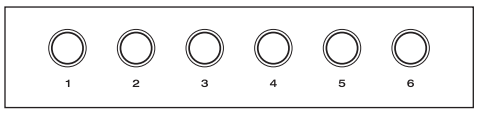


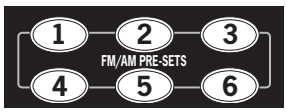
Automatic Tuning:
To find the next station, press ◀ **SEEK** or **SEEK** ▶ . To scan and listen to all available stations for a few seconds, press and hold ◀ **SEEK** or **SEEK** ▶ for about a second. The ' ◀ **Sk** ' or ' **Sk** ▶ ' indicator on the display will change to ' ◀ **Prv** ' or ' **Nxt** ▶ '. To stop scanning, press one of the ◀ **SEEK** ▶ buttons to return to Seek mode, or press **TUNE** to tune manually (Front Panel only). Press **TUNE** a second time to restore the regular functions and display (the TUNE function does not time out).



Direct Tuning (Remote Control Only)**:**
A station's frequency can be entered as a four-digit number. For example, to tune into 98.3 FM, press and hold **SELECT** until the display shows "<blank>0.0" in the lower left corner, then press **0**, **9**, **8**, **3**.

Presets:
18 FM and 6 AM stations can be stored. The presets are divided into four banks of six. By repeatedly pressing **FM•AM**, the display will show that you are cycling through 'FM1', 'FM2', 'FM3', 'AM'. Once you have selected the desired bank, you can store the currently tuned radio station by pressing and holding one of the six preset keys (**1** through **6**) for about a second. You can even do this while scanning for stations. The lower line of the display briefly flashes once the station is stored. To skip a preset, set it to 87.5 FM or 530 AM.





To recall a preset, select the bank that it is in, then press the respective preset key. From the Remote Control, you can also use the **CH+** and **CH–** keys to run through all FM or AM presets.

ST / HiB / M (Front Panel Only)**:**
If FM reception is weak, switching a station out of stereo can reduce or eliminate unwanted noise. Press **ST / HiB / M** repeatedly to cycle through Stereo, Hi-Blend, or Mono. Hi-Blend offers an alternative to Mono, offering decreased noise without the complete loss of stereo – it decreases hiss and noise by reducing some stereo separation only at higher frequencies. The setting is memorized individually for each preset.

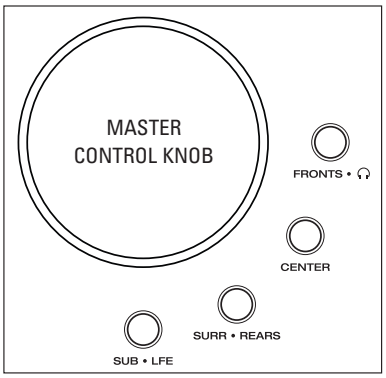
4.4.2 SIMULCAST

Simulcast allows you to select one video Source and a different audio Source. For example, you could view a sports event on TV while listening to your favorite FM•AM station. Simulcast is available for all Paths.

Press and hold the desired video Source button for 2 seconds. The display shows "SIMULCAST" and the video Source in the top line, and the audio Source in the bottom line – while this is on the display, press another Source button to select an audio Source. **Audio from an HDMI input cannot be used with a different video Source.** When the regular display returns, the Source LED indicates the video Source, and the display shows the audio Source next to a '+'.

To exit from Simulcast mode, press any Source button – both the audio and video will switch to this selection.

4.5 VOLUME CONTROL



Changing Volume via Front Panel:

MAIN – Adjust using the Master Control Knob. If levels have been calibrated according to section 3, set Volume to 0 dB for the playback level which the film was originally presented in theaters.

ZONE2 or **ZONE3** – Press ZONE2 or ZONE3, then adjust.

HEADPHONE – Check that the display reads MAIN, press FRONTS twice, then adjust. MAIN can be set to mute whenever headphones are plugged in (see section 3.9).

Changing Volume via Remote Control:
Make sure the appropriate control mode is set, then use the **VOL+** and **VOL–** keys.

Mute:
When MUTE is pressed, the audio of the selected Path is silenced (or reduced in level – see section 3.9). Press MUTE again, or rotate the Master Control Knob, and sound will return.

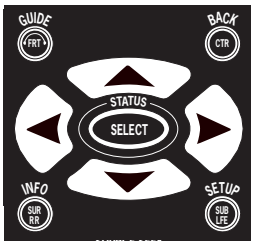
Always make sure you are in the Path that you want to adjust before changing Volume or muting.

Dialog Normalization:
Dolby Digital program material contains non-audio data which the AVM 50 uses to adjust playback level, when necessary, so that volume variations between movies and programs are eliminated. Without Dialog Normalization, movies not encoded at standardized levels for the dialog could lose dynamic range – higher levels can result in distorted peaks, lower levels can result in quiet sounds disappearing into the noise floor. Dialog Normalization also ensures that Dynamics control (section 4.8.10) works as intended.

If the display reads "Dial Norm Offset -4.0 dB" at the start of a movie, it is indicating that the encoded level is higher than standard by 4.0 dB – the playback level of all channels is then automatically reduced by 4 dB.

4.6 SURROUND MODE LEVELS

The AVM 50 memorizes the level of one group of channels relative to another separately for each surround mode (section 4.8), and for the 6-Ch input. To make a change for the surround mode that is currently playing, adjust using the Master Control knob or ▲ ▼ on the remote as follows:

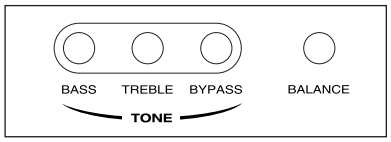


- **Fronts:** Press FRONTS, then adjust (this changes Left, Center, and Right levels together).
- **Center:** Press CENTER, then adjust.
- **Surrounds:** Press SURR•REARS, then adjust.
- **Rears:** Press SURR•REARS twice, then adjust.
- **Subwoofer Only:** Press SUB•LFE, then adjust. **Pressing SUB•LFE twice** allows you to reduce the level of the '.1' LFE channel while leaving the bass derived from the other channels unchanged. Certain movies exhibit prodigious levels of bass, and may need LFE adjustment.

To reset the above adjustments to 0 dB all at once, see section 3.12.

When listening in Stereo with Front speakers set to 'Large', the Subwoofer must be set to 'Super' if you want it to play (see section 3.2).

4.7 BASS / TREBLE / BALANCE



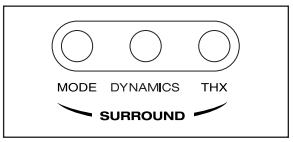
To change the Bass, Treble, or Balance of:

- **MAIN – All Speakers Simultaneously:** Press BASS, TREBLE, or BALANCE, then adjust.
- **MAIN – Fronts Only:** Press FRONTS, press BASS, TREBLE, or BALANCE, then adjust.

- **MAIN – Center Only:** Press CENTER, press BASS or TREBLE, then adjust.
- **MAIN – Surrounds Only:** Press SURR•REARS, press BASS, TREBLE, or BALANCE, then adjust.
- **MAIN – Rears Only:** Press SURR•REARS twice, press BASS, TREBLE, or BALANCE, then adjust.
- **ZONE2** or **ZONE3:** Press ZONE2 or ZONE3, press BASS, TREBLE, or BALANCE, then adjust.
- **HEADPHONE:** Press FRONTS• twice, press BASS, TREBLE, or BALANCE, then adjust.

Pressing BYPASS disables Bass/Treble in the selected Path. To enable Bass/Treble, be certain you are in the Path that you want to adjust and press either BASS or TREBLE. To reset all the above adjustments to 0 dB, see section 3.12. Bass/Treble is not available for Anlg-Dir sources (see section 3.5).

4.8 SURROUND MODES



A surround mode is signal processing that enhances original source material. Surround modes fall into two main categories – those that apply to **stereo** source material and those that apply to **multichannel** source material.

Factory defaults for Surround Modes are set so that all of your surround speakers are used with any type of source material except 1.0-channel input. To change these defaults, see Mode Presets in section 3.5.

Stereo Source Material:
This includes analog stereo, digital PCM stereo, and Dolby Digital 2.0 source material. Surround modes can be applied to provide up to 7.1 channels of output. They are described later in this section. Each Source memorizes its own Mode setting, so you can, for example, set VCR to 'AnthemLogic-Cinema', and then set CD to 'AnthemLogic-Music' – when you change Source, the respective Modes are remembered.

Surround modes are not available for inputs set to Anlg-Dir (see section 3.5).

Regarding analog VCR input: With analog, there is no way for a processor to detect Dolby Surround encoded material. Dolby Pro Logic must be turned on manually by selecting it in the Mode options.

5.1- and 6.1-Channel Source Material:
The AVM 50 detects the digital format that you select on each DVD and automatically engages decoding for the selected format.

As soon as the AVM 50's display shows the format, you can select additional processing, described throughout this section. Your selections are memorized by format and by Source as well.

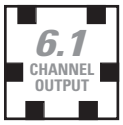
Why isn't my AVM 50 detecting Dolby Digital 5.1 or DTS?
The connection can carry only one bit stream at a time, and the processor plays exactly what it gets. Make sure your DVD player's setup menu is set to leave Dolby Digital and DTS unchanged ("Bitstream"), otherwise output will always be 2.0-channel PCM! You must also select the soundtrack that you want to hear from each disc's menu, or after the movie starts by pressing AUDIO on the player's remote control.

Various surround modes produce 6.1 or 7.1 channels of output. If you are using a 5.1 system and have Rears set to 'None' in the Speaker Configuration (section 3.2), no information is lost – it comes out of the L/R Surround channels.

4.8.1 AnthemLogic™

These are proprietary surround modes developed by Anthem that offer outstanding surround performance and can be applied to any 2-channel source material:

AnthemLogic-Music™



AnthemLogic-Music™ enhances the stereo listening experience without detracting from the stereo soundstage. Through extensive listening tests a very effective design was developed. This is a minimalist design that uses no echo or reverberation effects which could negatively affect the purity of the sound.

Depending on your speaker configuration, up to 6.1 channels of output are provided – L/R Fronts, L/R Surrounds, L/R Rears and Subwoofer. AnthemLogic-Music™ does not utilize the Center Channel, to ensure that the purity of the stereo music soundstage will in no way be compromised when you're sitting in the 'sweet spot' and listening to your favorite stereo recordings.

AnthemLogic-Music™ is very effective in creating an expansive musical soundstage that psychoacoustically helps to remove the barrier of the listening room itself, and it does so in a completely non-intrusive, natural and very compelling way. This is the factory default 2-channel Mode for CD, TAPE, and FM•AM.

AnthemLogic-Cinema™

AnthemLogic-Cinema™ provides a large, enveloping and dynamic movie listening experience that makes 2-channel movies sound more like what is experienced in a state-of-the art movie theater. Again through extensive listening tests a very effective design was developed. This is also a minimalist design that avoids the use of echo effects, which could otherwise negatively affect the purity of the sound.

AnthemLogic-Cinema™ uses the rear speakers to provide up to 7.1 channels of output, depending on your speaker configuration.

AnthemLogic-Cinema™ provides the missing link that lets you experience 7.1 channels of output for full impact home theater sound, from any 2-channel stereo analog source such as VCR or TV, or any Dolby Digital 2-channel source, such as DVD or satellite. This is the factory default 2-channel Mode for all Sources except CD, TAPE, and FM•AM.

4.8.2 DOLBY DIGITAL 2.0

Dolby Digital 2.0 soundtracks with surround encoding contain a flag that can be used to automatically activate Pro Logic IIx Movie mode. The AVM 50 can be set to either use this flag or to override it.

To find out if the Dolby Digital 2.0 material being played has the surround flag, press **MODE**. If flagged, the first line of the display says "DOLBY D 2.0 SUR AUTO" and if not flagged, it says "MODE FOR 2 CH INPUT".

The Modes in the next section may be selected separately for flagged and unflagged stereo source material.

Single-channel soundtracks can be encoded in one of two ways – either using the Center channel, or with the same signal into the Left/Right channels. The Mode changes to Mono if the soundtrack uses only the Center channel – you can switch it to Mono-Academy or All Channel Mono afterwards.

4.8.3 SURROUND MODES FOR 2.0-CHANNEL SOURCE MATERIAL

Number of output channels for each Mode is indicated below in bold type – '.1' refers to a subwoofer signal derived through bass management, not a separate channel (see section 3.2). Press **MODE**, then rotate the Master Control Knob or use ▲ ▼ (up/down) on the remote control to cycle through the following:

THX must be Off for all Modes to be available (see section 4.8.6).

Stereo: No surround mode is applied.

AnthemLogic-Music: **6.1** – One of Anthem's proprietary surround modes, designed to expand the soundstage of stereo music in a very natural way without losing soundstage integrity or image focus. **The Center channel is not used.**

AnthemLogic-Cinema: **7.1** – Another proprietary mode from Anthem, designed to provide the impact of a large theater experience from 2-channel movies and TV programs.

Pro Logic IIx Music: **7.1** – Created for use with stereo music material. The following three parameters can be adjusted by pressing the **MODE** button one, two, or three times while in Pro Logic IIx Music, and rotating the Master Control Knob or using ▲ ▼:

Center Width is adjustable from 0 to 7 – '0' places all Center sound in the Center speaker, while '7' places it equally in the Left and Right channels.

Dimension helps achieve the desired front-to-back balance by providing seven steps of adjustment between the Surround and Center channels.

Panorama is effective for recordings with strong left or right channel elements. When 'On', it extends the front stereo image to include the Surround channels.

Pro Logic IIx Movie: **7.1** – Dolby Surround decoder for 2-channel movies and TV programs.

Pro Logic IIx Matrix: **7.1** – A matrix decoder that does not steer the image from one speaker to another.

Pro Logic IIx Game: **7.1** – Bass from surround effects in video games is optimized for visceral impact.

Dolby Pro Logic: **4.1** – In case there's a desire to hear it "as it used to be" (Surrounds are mono).

Neo:6 Music: **6.1** – Can be used with stereo music material to create 6.1 output channels. The center image can be adjusted by pressing **MODE** while in Neo:6 Music, and rotating the Master Control Knob or using ▲ ▼ (up/down) on the remote:

Center Image is adjustable from 0 to 5 – increasing the number gives more center channel prominence.

Neo:6 Cinema: **6.1** – A matrix decoder that can be used with any matrix-encoded movie. Separation is created by allowing various sounds to be placed at different points in the sound field simultaneously.

All Channel Stereo: **7.1** – The Left and Right channels are also sent to the Surround and Rear channels, while the Center channel and Subwoofer receive a combination of both. Some processing is used to retain image clarity. Useful for playing music at parties so that it can be heard with equal loudness in all parts of the room.

All Channel Mono: **7.1** – Combines the Left and Right channels and sends the signal to all speakers.

Mono: **1.1** – Combines the Left and Right channels and sends them to the Center speaker.

Mono-Academy: **1.1** – Gives a presentation closer to the original on movies made from the 1930s to the 1960s, which relied on high-frequency rolloff for sound balance and to mask inherent hiss. Use with old mono movies that sound overly noisy. Can also be useful with DVDs of some TV shows if high-pitched noise leakage from a CRT (cathode ray tube) monitor is audible in the recording.

4.8.4 DOLBY DIGITAL EX / PRO LOGIC IIx FOR 5.1 SOURCES

Dolby Digital EX and Pro Logic IIx can be used to decode DVDs encoded in Dolby Digital Surround EX by extracting Rear channel information from the two Surround channels. Dolby Digital EX creates a mono Rear signal, whereas with Pro Logic IIx, the two Rear channels play a stereo signal. Either one of these Modes can be applied to any other 5.1-channel material. The Rear channels may or may not be pleasing depending on the soundtrack.

A list of movies encoded in Dolby Digital Surround EX can be found on the Dolby web site at www.dolby.com and on the THX web site at www.thx.com. Newer titles contain a flag that can automatically engage Dolby Digital EX / Pro Logic IIx, whereas older titles do not. Press **MODE** when a movie starts playing and use the Master Control Knob to select the Mode that sounds best – the display says "DOLBY D 5.1 INPUT" if the soundtrack is unflagged, and "DOLBY D EX AUTO" if it is flagged.

4.8.5 DTS-ES

There are two ways that Rear channel information is encoded in DTS-ES – Matrix and Discrete:

- **Matrix** – DTS-ES Matrix movies contain a matrixed Rear channel. The AVM 50 automatically engages Neo:6 to decode DTS-ES Matrix. Neo:6 can also be turned on manually and applied to any other 5.1-channel material – when a movie starts playing, press **MODE** and use the Master Control Knob to select. A mono Rear channel is derived from the Left and Right Surround channels. This Rear channel may or may not be pleasing depending the soundtrack.
- **Discrete** – DTS-ES Discrete soundtracks contain 6.1 channels with an independent Rear channel. The AVM 50 automatically engages DTS-ES Discrete decoding.

4.8.6 THX ULTRA2 / THX SURROUND EX

THX SURROUND EX

THX is an exclusive set of standards and technologies established by the world-renowned film production company, Lucasfilm Ltd. THX grew from George Lucas' personal desire to make your experience of the film soundtrack, both in movie theaters and in your home theater, as faithful as possible to what the director intended. Movie soundtracks are mixed in special movie theaters called dubbing stages and are designed to be played back in movie theaters with similar equipment and conditions. This same soundtrack is very often transferred to DVD, Laserdisc, VHS tape, etc. without any adjustments for playback in the smaller home theater environment. THX engineers developed patented technologies to accurately translate the sound from the movie theater environment into the home, restoring proper tonal and spatial balance.

Each THX mode includes a specific combination of the following:

- **Re-Equalization** – Restores the correct tonal balance for home playback. A film soundtrack may sound too bright when played in the home, because film soundtracks are designed for large movie theaters where acoustical properties are different. To enable or disable Re-EQ, press **THX** twice to display "THX RE-EQUALIZATION", then select On or Off with the Master Control Knob or ▲▼ (up/down) on the remote control. **You can even apply Re-EQ when THX is Off** – this can be useful if the high-pitched noise produced by standard CRT monitors accidentally leaked into the audio while it was being recorded, and you would like to filter it out.
- **Timbre Matching** – The human ear changes our perception of a sound depending on the direction from which the sound is coming. In a movie theatre, there is an array of surround speakers so that the surround information is all around you. In a home theatre, you use only two speakers located to the side of your head. Timbre Matching, which includes Re-EQ, filters the information going to the surround speakers so that they more closely match the tonal characteristics of the sound coming from the front speakers. This ensures seamless panning between the front and surround speakers.

- **Adaptive Decorrelation** – In a movie theatre, a large number of surround speakers help create an enveloping surround sound experience, but in a home theatre there are usually only two speakers. Unless you are using properly positioned dipoles, surround speakers can sound like headphones that lack spaciousness and envelopment – they will also collapse into the closest speaker as you move away from the middle seating position. Adaptive Decorrelation senses the presence of identical surround channels (mono) and slightly changes one surround channel's time and phase relationship with respect to the other. This expands the listening position and creates – with only two speakers – the same spacious surround experience found in a movie theatre. Adaptive Decorrelation does not operate when the surround channels are different, as is often the case in discrete multichannel source material.
- **ASA (Advanced Speaker Array)** – ASA is a proprietary THX technology that processes the sound fed to the two surround and two rear speakers to provide an optimal surround sound experience. When you set up your home theater system using all 7.1 speaker outputs (L-Front, Center, R-Front, R-Surround, R-Rear, L-Rear, L-Surround, Subwoofer), placing the two Rear speakers close together will provide the largest sweet spot. If for practical reasons you have to place the Rear speakers further apart, you will have to go to the Listener Position menu (section 3.3) and choose the setting that most closely corresponds to the speaker spacing to re-optimize the surround soundfield.

Depending on source material and speaker configuration, THX processing is available as follows:

THX Cinema: **5.1** to **7.1** output with 2.0- and 5.1-channel movies (see overview that follows)
Processing: Re-Equalization, Timbre Matching, Adaptive Decorrelation (if applicable)

When THX Cinema is selected, Dolby Pro Logic IIx Movie is automatically engaged. Alternatively, Dolby Pro Logic or DTS Neo:6 Cinema may be selected. Other Surround Modes are not available and do not appear when pressing MODE.

THX Ultra2 Cinema: **7.1** output with 5.1-channel movies
Processing: Re-Equalization, Timbre Matching, Adaptive Decorrelation, ASA (Cinema)

THX Ultra2 Cinema mode plays 5.1 movies using all 7.1 speakers giving you the best possible THX movie watching experience with 5.1 program material. In this mode, ASA processing blends the L/R-Surround speakers and L/R-Rear speakers providing the optimal mix of ambient and directional surround sounds.

THX MusicMode: **7.1** output with 5.1-channel music (including **DVD-Audio, multichannel SACD**)
Processing: Timbre Matching, Adaptive Decorrelation, ASA (Music)

THX MusicMode can be selected when playing multi-channel music. In this mode THX ASA processing is applied to the surround channels of all 5.1 channel encoded music sources to provide a wide stable rear soundstage.

THX Games Mode: **7.1** output with 2.0- and 5.1-channel games
Processing: Timbre Matching, ASA (Games)

Game audio is mixed and monitored in a different environment than that of music and movies. The interactive nature of the audio requires a playback system which can provide 360 degree panning while preserving the ambient nature of background sound elements. When playing back 5.1 games, THX Games Mode may be engaged. Suitable sources are Dolby Digital 5.1 and DTS 5.1 game sources. If THX Games Mode is engaged with 2.0 input, the source is first converted to 5.1 via Pro Logic IIx Game mode.

THX Surround EX: **6.1** output with **Dolby Digital Surround EX**
Processing: Re-Equalization,Timbre Matching

THX Surround EX – Dolby Digital Surround EX is a joint development of Dolby Laboratories and the THX division of Lucasfilm Ltd.

In a movie theater, film soundtracks that have been encoded with Dolby Digital Surround EX technology are able to reproduce an extra channel which has been added during the mixing of the program. This channel (called Surround Back, but named Rear in the AVM 50), places sounds behind the listener in addition to the currently available L-Front, Center, R-Front, R-Surround, L-Surround and Subwoofer channels. This additional channel provides the opportunity for more detailed imaging behind the listener and brings more depth, spacious ambience, and sound localization than ever before.

Movies that were created using the Dolby Digital Surround EX technology may exhibit wording to that effect on the packaging when released on DVD. A list of movies created using this technology can be found on the Dolby web site at www.dolby.com. A list of DVD titles encoded with this technology can be found on the THX web site at www.thx.com.

Bearing the THX Surround EX logo, the AVM 50 will faithfully reproduce this technology in the home when in THX Surround EX mode.

The AVM 50 also allows you to engage THX Surround EX during playback of 5.1-channel material that is not encoded with Dolby Digital Surround EX. The information delivered to the Rear channel will be program dependent and may or may not be pleasing depending on the soundtrack and your listening tastes.

In compliance with THX requirements, Bass/Treble, Surround Mode Level, and Balance adjustments are **reset to 0 dB** whenever a THX mode is selected, after which you can make adjustments with THX engaged if you wish to do so. When THX is turned 'Off', previous settings are restored, except for Balance (see sections 4.6 and 4.7). Also note that due to the nature of digital bitstreams, adjustments made while THX is engaged will be reset to 0 dB if the program is paused for longer than 3 seconds.

Outputs indicated are the number of output channels as follows:
6.1 = L-Front, Center, R-Front, R-Surround, Rear*, L-Surround, LFE/Subwoofer
7.1 = L-Front, Center, R-Front, R-Surround, R-Rear, L-Rear, L-Surround, LFE/Subwoofer

* If two rear speakers are used, the same Rear channel information goes to both.

THX Ultra2 Overview

Key:		
	Re-EQ	– De-emphasizes treble. May be turned on or off at any time after pressing **THX** twice.
	Timbre	– Matches the sound character, or timbre, of the surround channels to the front channels.
	Adp-Decor	– When content of L/R-Surrounds is mono, adjusts time and phase to restore spaciousness.
	ASA	– Surround and Rear channels are processed to provide a wide rear soundstage.

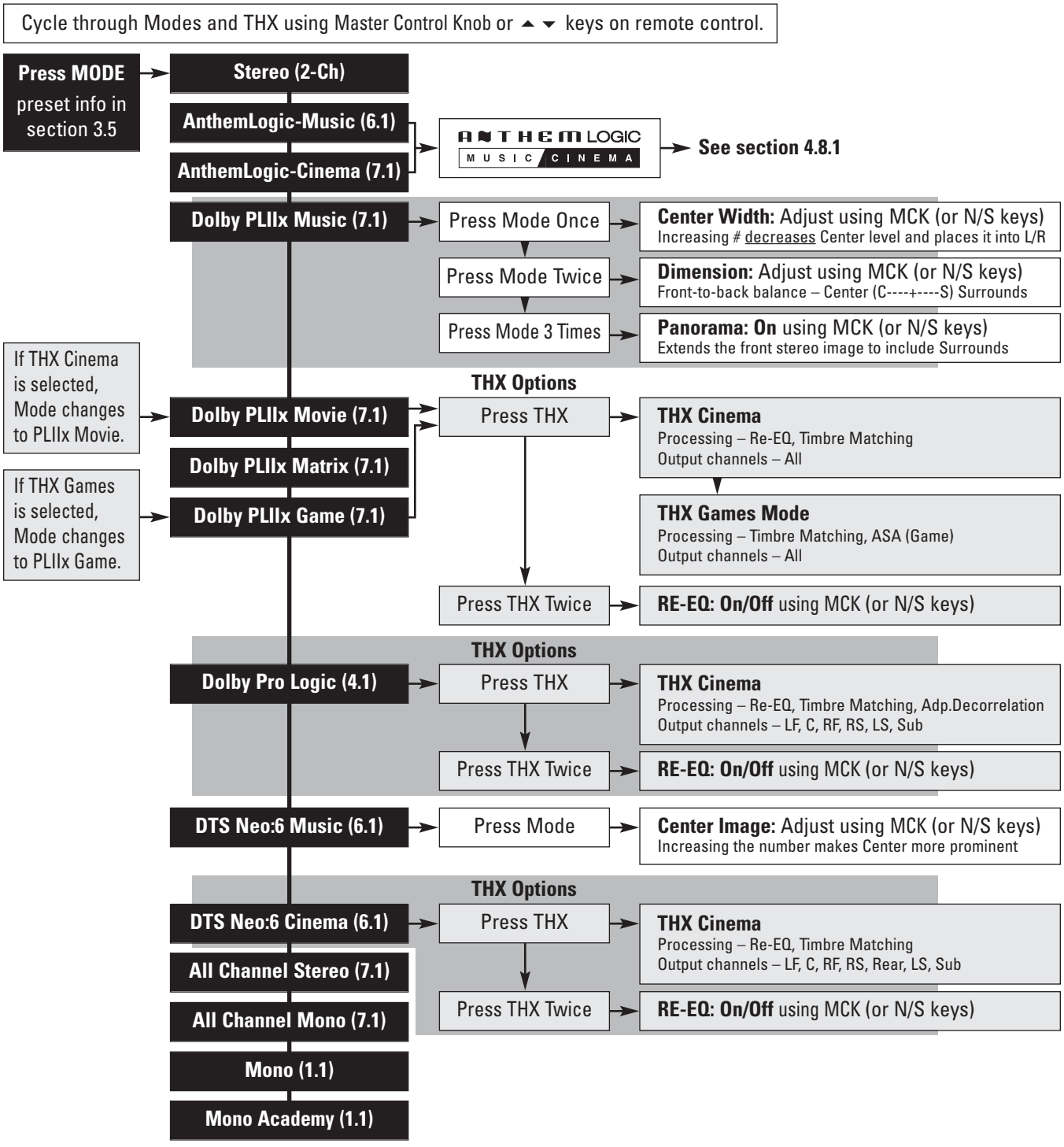
Program	Decoding / Processing	THX Available	Outputs	THX Processing
Stereo	Selected Mode	Off	up to 7.1	Off
	PLIIx Movie†	THX Cinema	7.1	Re-EQ, Timbre
	PLIIx Games	THX Games Mode	7.1	Timbre, ASA (Gam)
	Dolby Pro Logic	THX Cinema	5.1	Re-EQ, Timbre, Adp-Decor
	Neo:6 Cinema	THX Cinema	6.1	Re-EQ, Timbre
Dolby Digital 5.1	Dolby Digital	Off	5.1	Off
	Dolby Digital	THX Cinema	5.1	Re-EQ, Timbre, Adp-Decor
	Dolby D 5.1+PLIIx Movie	THX Cinema	7.1	Re-EQ, Timbre
	Dolby Digital	THX Ultra2 Cinema	7.1	Re-EQ, Timbre, Adp-Decor, ASA (Cin)
	Dolby Digital	THX MusicMode	7.1	Timbre, Adp-Decor, ASA (Mus)
	Dolby Digital	THX Games Mode	7.1	Timbre, ASA (Gam)
	Dolby Digital EX*	THX Surround EX	6.1	Re-EQ, Timbre
	Dolby D 5.1+Neo:6	THX Cinema	6.1	Re-EQ, Timbre
DTS 5.1	DTS	Off	5.1	Off
	DTS	THX Cinema	5.1	Re-EQ, Timbre, Adp-Decor
	DTS+Neo:6	THX Cinema	6.1	Re-EQ, Timbre
	DTS	THX Ultra2 Cinema	7.1	Re-EQ, Timbre, Adp-Decor, ASA (Cin)
	DTS	THX MusicMode	7.1	Timbre, Adp-Decor, ASA (Mus)
	DTS	THX Games Mode	7.1	Timbre, ASA (Gam)
	DTS+PLIIx Movie	THX Cinema	7.1	Re-EQ, Timbre
DTS-ES Matrix§	DTS+Neo:6	Off	6.1	Off
	DTS+Neo:6	THX Cinema	6.1	Re-EQ, Timbre
	DTS+PLIIx Movie	THX Cinema	7.1	Re-EQ, Timbre
DTS-ES Discrete§	DTS-ES Discrete	Off	6.1	Off
	DTS-ES Discrete	THX Cinema	6.1	Re-EQ, Timbre

† DVDs with Dolby Digital 2.0 Surround may be flagged for auto-detection.

* DVDs with Dolby Digital Surround EX may be flagged for auto-detection.

§ DVDs with DTS-ES Matrix and DTS-ES Discrete are flagged for auto-detection.

4.8.7 Mode and THX Operation for 2.0-Channel Source Material – To make all Modes available, turn THX Off.

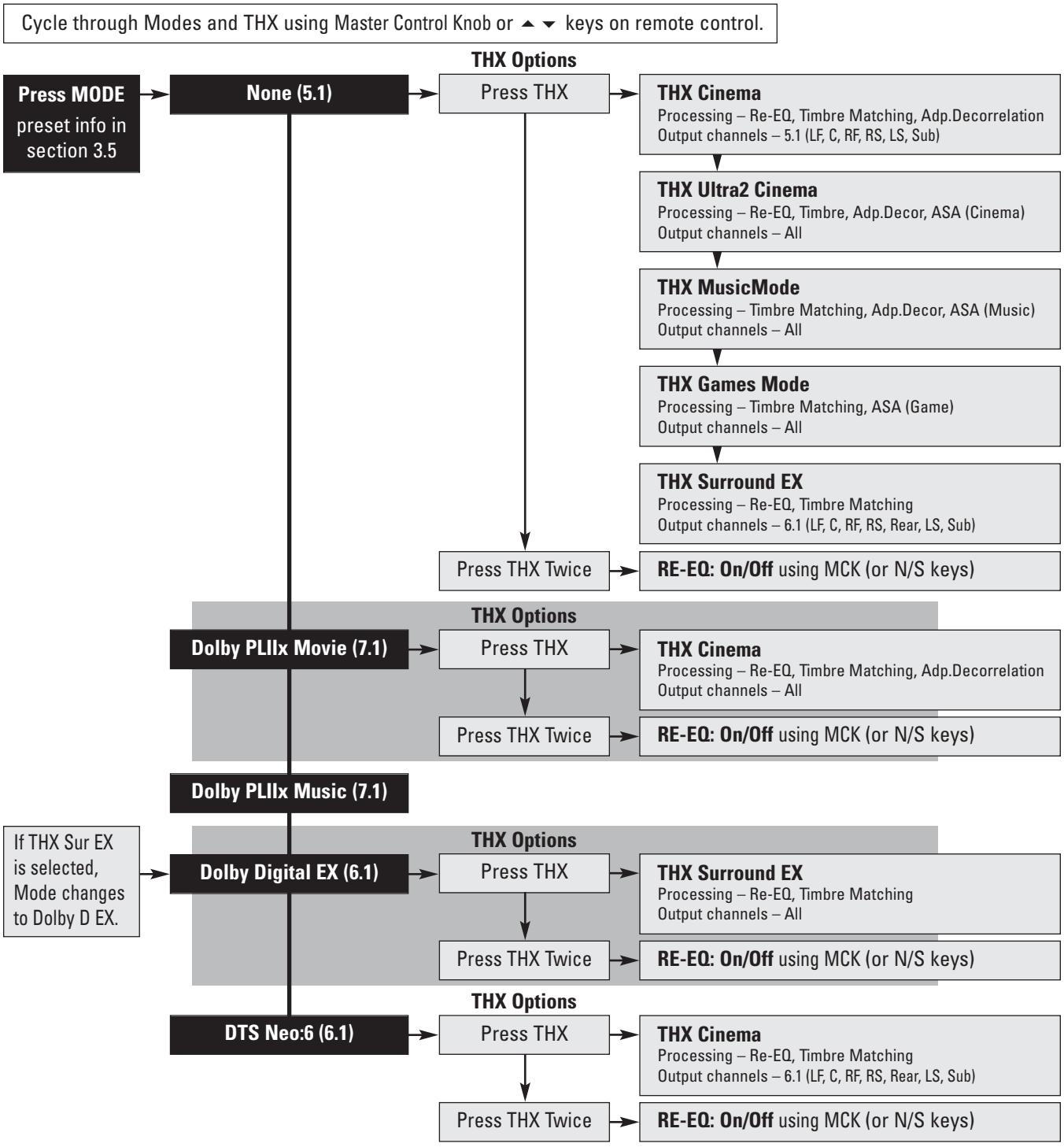


Selections are memorized separately for each Source and for Dolby Digital Surround 2.0-flagged vs. unflagged material.

THX Processing (for complete descriptions see section 4.8.6):

- **Re-Equalization** – De-emphasizes treble. Not applicable to THX Games Mode.
- **Timbre Matching** – Matches the sound character, or timbre, of the surround channels to the front channels.
- **Adaptive Decorrelation** – When content of L/R Surrounds is mono, adjusts time and phase to restore spaciousness.
- **ASA** – Surround and Rear channels are processed to provide a wide rear soundstage.

4.8.8 Mode and THX Operation for Dolby Digital 5.1 and 6-Ch S/E – To make all Modes available, turn THX Off.



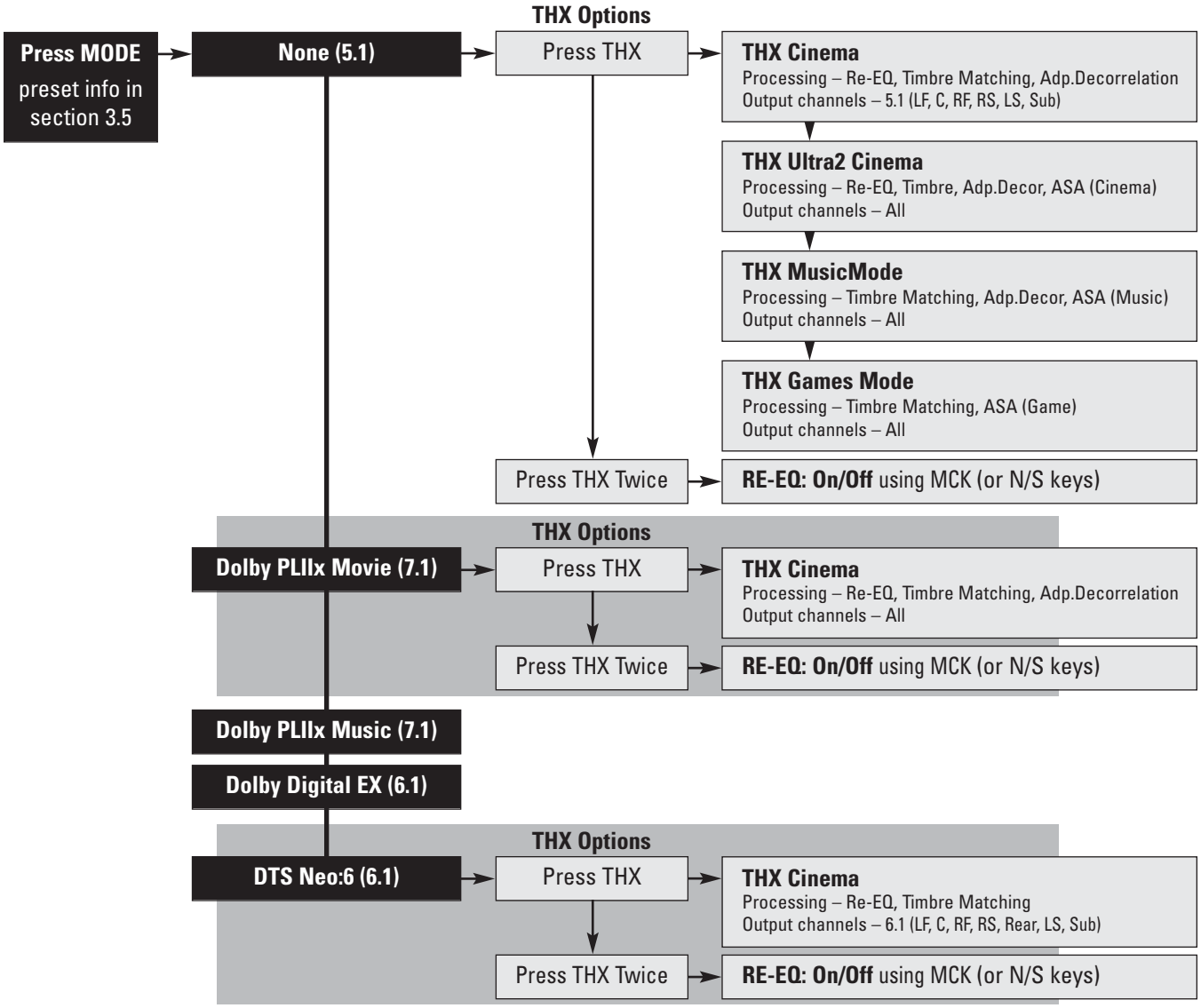
Selections are memorized separately for each Source and for Dolby Digital Surround EX-flagged vs. unflagged material.

THX Processing (for complete descriptions see section 4.8.6):

- **Re-Equalization** – De-emphasizes treble. Not applicable to THX MusicMode and THX Games Mode.
- **Timbre Matching** – Matches the sound character, or timbre, of the surround channels to the front channels.
- **Adaptive Decorrelation** – When content of L/R Surrounds is mono, adjusts time and phase to restore spaciousness.
- **ASA** – Surround and Rear channels are processed to provide a wide rear soundstage.

4.8.9 Mode and THX Operation for DTS Source Material – To make all Modes available, turn THX Off.

Cycle through Modes and THX using Master Control Knob or ▲ ▼ keys on remote control.



Selections are memorized separately for each Source and for DTS vs. DTS-ES.

DTS-ES Discrete: The only applicable selection is THX Cinema (6.1, Re-EQ, Timbre Matching).

THX Processing (for complete descriptions see section 4.8.6):

- **Re-Equalization** – De-emphasizes treble. Not applicable to THX MusicMode or THX Games Mode.
- **Timbre Matching** – Matches the sound character, or timbre, of the surround channels to the front channels.
- **Adaptive Decorrelation** – When content of L/R Surrounds is mono, adjusts time and phase to restore spaciousness.
- **ASA** – Surround and Rear channels are processed to provide a wide rear soundstage.

4.8.10 DYNAMICS

This allows you to control the difference between the softest and loudest passages on 5.1/6.1-channel soundtracks, as long as the soundtrack contains dynamic scaling information and at least 5.1 speakers are used. Press **DYNAMICS** and then use the Master Control Knob or ▲ ▼ keys on the remote control to select:

Reduced: Allows the quieter parts to be heard more easily, and works by raising the level of quieter sounds and/or reducing the level of louder ones according to cues encoded on the DVD.

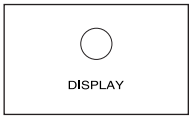
Late Night: Reduces the softest-to-loudest difference even further.

'Reduced' and 'Late Night' get reset back to 'Normal' when Main power is turned off.

4.9 LIP-SYNC DELAY (Remote Control Only)

To adjust Lip-Sync Delay while viewing the picture and listening to the soundtrack simultaneously, press and hold the **DISPLAY** key until the display shows "LIP-SYNC DELAY", then use the ◀ ▶ keys to move from digit to digit and the ▲ ▼ keys to adjust (see section 3.5).

4.10 DISPLAY BRIGHTNESS (Front Panel Only)



The brightness of the Front Panel display and LED indicators can be changed. Press **DISPLAY** and then use the Master Control Knob to select Maximum, High, Medium, Low, or Off. The Front Panel Wake-Up can be modified, as can the time-to-rest when the display will dim (see section 3.11).

4.11 VIDEO SOURCE ADJUSTMENT

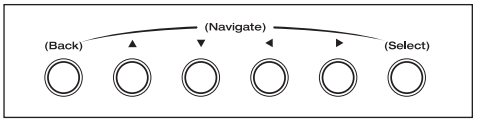
ANTHEM HD BROADCAST QUALITY SCALER VXP BY GENNUM

Anthem's video processor allows **separate adjustment for each Source**. Adjust **after** setting up the Video Output menu (section 3.8). Upon entering the Video Processing Menu, the On-Screen display appears together with the video source so that you can see changes to the picture as you make them in the menu.

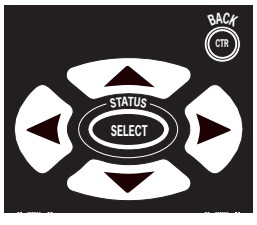
The outcome of the settings in the Video Processing Menu depends on settings in your source components, **so set them up <u>first</u>,** for example, setting your DVD player's output to 16:9.

Entering the video processing menu:
For three seconds, press and hold DISPLAY on the Front Panel or ON SCREEN on the Remote.

Navigating through menus and items:
Use the ▲ ▼ and ◀ ▶ keys.



Selecting an item:
Press SELECT. Menu items with a right-arrow ▶ beside them lead to further selections or adjustments once SELECT is pressed again.



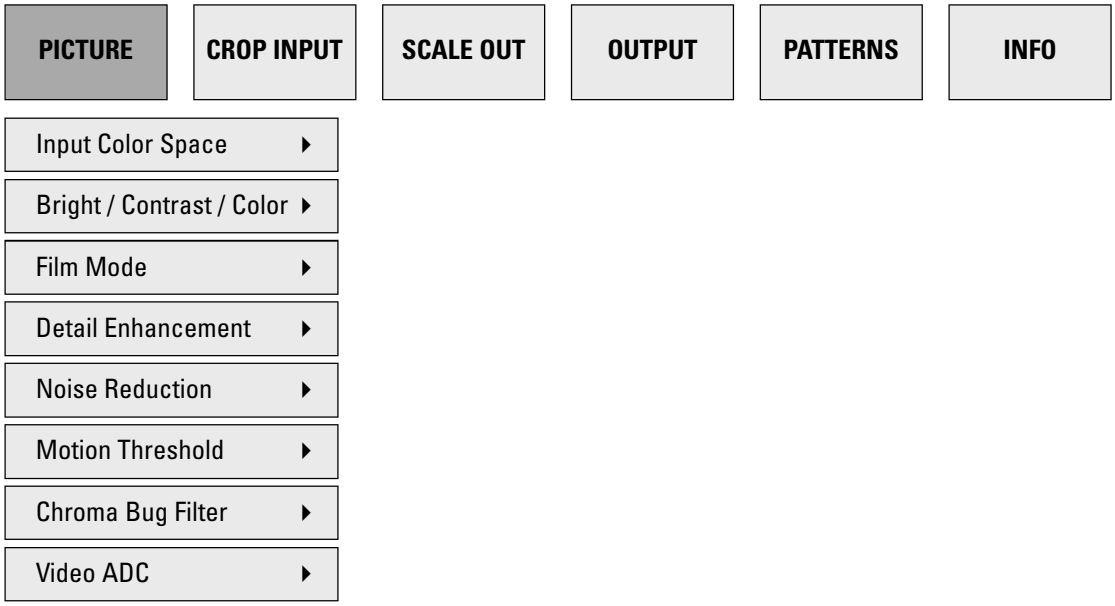
Making adjustments when a slider is displayed:

Use the ◀ ▶ keys. Use ▲ ▼ to go to the next slider if the menu has more than one.

Returning after making an adjustment:
Press SELECT to return to the item or BACK to return to the item's menu.

Exiting from the menu:
Press BACK as many times as necessary.

The Picture menu provides video adjustments for the source material and each source component.



Input Color Space
Enter the color space of the source here – HDTV YCbCr, SDTV YCbCr, Auto YCbCr (switches color space according to whether input is HD or SD), Studio RGB, or Extended RGB. If you do not know the color space of the source, use the setting that produces the best picture, especially with dark scenes.

Brightness / Contrast / Color / Tint
If a source needs Brightness (black level), Contrast (white level), Color (saturation), or Tint (hue or phase) adjustment, you can do it here. The factory default for each of these is 50. If input is RGB and output is RGB, Color and Tint are not adjustable, so that color space conversion is avoided. If you need to adjust the image when output is set to RGB (or Extended) in menu 8, set the source to YCbCr output.

Film Mode
Did the source originate from film or from video? If from a video camera, which type? If it's a film source on TV, was a regular pattern of fields deleted to change the playing speed? Is it animation, and if so, according to which animation spec? Is it a mix of sources edited together? Are video characters being scrolled across a film source?

In order for a video processor to provide best image quality, it must detect the source's cadence, or pattern of field sequence, and deconstruct it accordingly. The Gennum VXP processor can not only do that, it can do so even when the input is high-definition. Film Mode can be overridden by changing the setting from 'Auto' to 'Off', but don't do it unless you need to.

Detail Enhancement
Digital processing is used to do what the name implies – experiment with the level adjustment and leave it where the picture looks best. The factory default is 0.

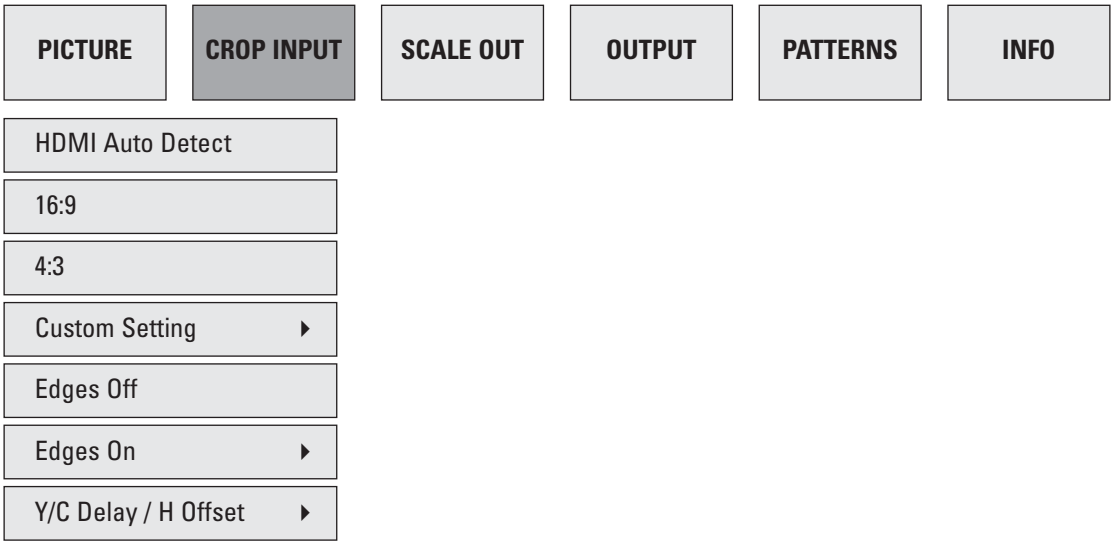
Noise Reduction
This can be used to reduce or remove 'snow' in the picture, often seen in broadcasts – experiment with the level adjustment and leave it where the picture looks best. The factory default is 0.

Motion Threshold
A high-quality deinterlacer has to treat the areas of the picture that contain motion differently from the areas that have very little or no motion. The motion threshold is the point where one type of deinterlacing changes to another. The factory default (4) should work best but adjustment is provided in case it's needed.

Chroma Bug Filter
An encode/decode error inherent with DVD appears as horizontal streaks over areas that are rich in color, especially red areas in cartoons and computer animation. Turn correction 'On' if you see such an artifact, but don't spend any energy looking for it – your DVD player, depending on model, may already be fixing it.

Video ADC
S-Video and component video signals containing anomalies may need adjustment before being converted to digital. Video Input Gain (default: Auto) changes the white level – adjust if bright areas are too bright. Video Input Offset (default: 50) changes the black level – adjust if dark areas are too dark. Sampling Phase adjustment (default: 15) is useful when video comes from a video DAC (e.g. computer video card) and contains ringing edges due to improper filtering – adjust for minimal "ghost" imaging while using a static black and white picture with lots of detail and sharp edges.

The Crop Input menu is where the 'frame' for the image is controlled. If there's anything that you want to get rid of at the outer edges of the picture, this is the best place to do it, i.e. before further processing.



HDMI Auto Detect
Operates according to a flag in HDMI data. Although the AVM 50 recognizes this flag at the input, and also sends it to displays via the output, your source or display may not – set manually if necessary.

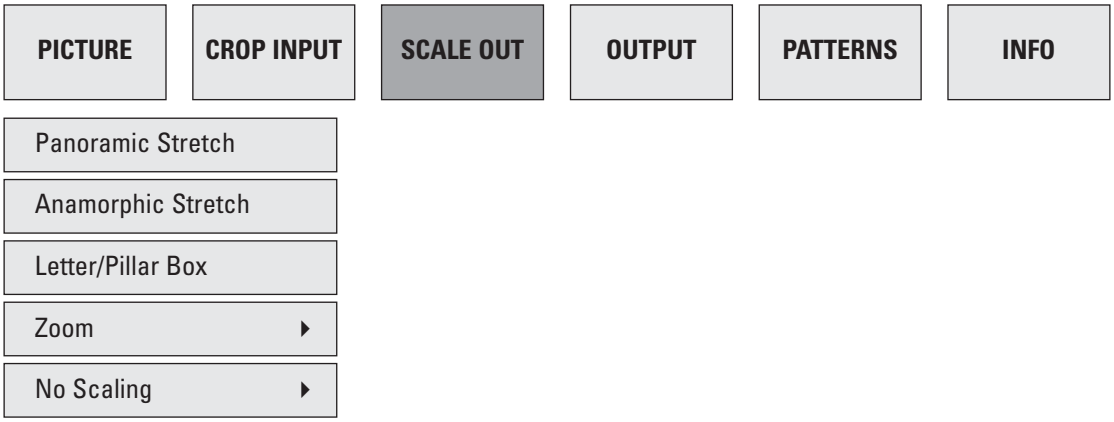
16:9 and 4:3
Make the selection that displays the picture correctly. If the source is standard-definition DVD, normally you would set cropping to 4:3 when the DVD is anamorphic and 16:9 when letterboxed or when an anamorphic projection lens is used for viewing 'Scope' movies (more info on aspect ratios on next page).

Custom Setting
If the above aren't suitable, adjust Horizontal Size, Vertical Size, Horizontal Position, and Vertical Position. Since position can be adjusted, this can be the right option for sources with substantially off-center images.

Edges
This selection is independent of the preceding ones. When 'On' is selected, the outer edges of the input are removed. Use if you see any non-picture 'garbage' along the outer edges. Number of pixels removed from each edge is adjustable from 0 to 20.

Y/C Delay and Horizontal Offset
Adjust if image is not centered, or if YCbCr source needs Y/C delay adjustment. See also Sync in section 3.8.

The Scale Output menu provides several options for making non-16:9 inputs, and 16:9 inputs that have shrunk due to being matted (letterboxed) then pillarboxed, fit on a 16:9 screen. To quickly check what the source component is putting out, select 'No Scaling', then make the appropriate selection.



Panoramic Stretch
Fills the screen by stretching only the sides of the picture. The middle portion stays undistorted. Use with 4:3 input if you don't like seeing empty sides on a 16:9 screen.

Anamorphic Stretch
Fills the screen by stretching the whole picture sideways. Use this setting for DVDs that are anamorphic, or "enhanced for widescreen TVs" as some DVD cases indicate when the source material has an aspect ratio greater than 4:3. The images on these DVDs are squeezed sideways so that the full vertical resolution can be used on the image instead of being wasted on recording a letterbox. The image then has to be stretched back to normal to be displayed properly.

Letterbox and Pillarbox
With this setting, original aspect ratio is preserved, therefore parts of the screen are left empty. The shade of the empty areas can be adjusted – see section 3.8.

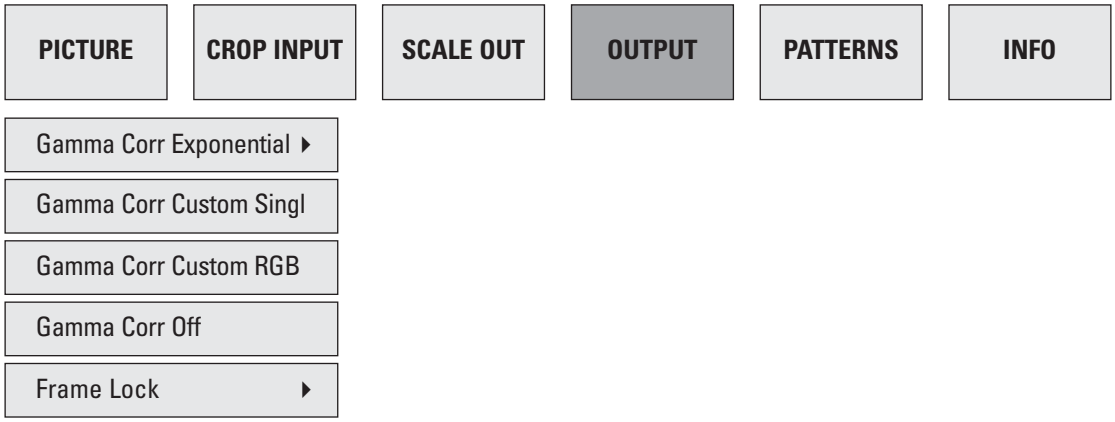
Zoom
Intended for temporary close-up. Zoom Size is adjustable, and if it's changed from the factory default (100), Horizontal Position and Vertical Position become adjustable. Note that Zoom acts on the output, after processing, and does not produce an image with as high quality as Custom Setting under Crop Input – Zoom enlarges artifacts as well as the image whereas Crop Input discards the unwanted material before processing, thus using the processor's power towards the part of the frame that you want to view.

No Scaling
Scaling is bypassed – standard-def images normally shrink to center of screen. Intended for comparisons during test and setup. Horizontal Size and Vertical Size adjusments remove the outsides of the image, and if they're changed from the factory defaults (100), Horizontal Position and Vertical Position become adjustable.

Examples of the most common aspect ratios:
The aspect ratio of a screen or image is the proportion of its width to its height.

1.33:1 (4:3)	**1.78:1** (16:9)	**2.35:1**
SDTV, most PC monitors	HDTV, widescreen movies	'Scope' movies
classic movies	movies also 1.66:1, 1.85:1	also 2.20:1, 2.40:1, 2.55:1

The Output menu is used to select gamma correction and to turn frame lock on/off. Gamma correction can be used with displays that do not show the correct light level within a certain range. Proper setup requires test patterns and test equipment normally used by calibration professionals. Gamma correction curves other than exponential (default 100) must be made through a computer – see section 3.8. The default gamma selection is Gamma Corr Off.

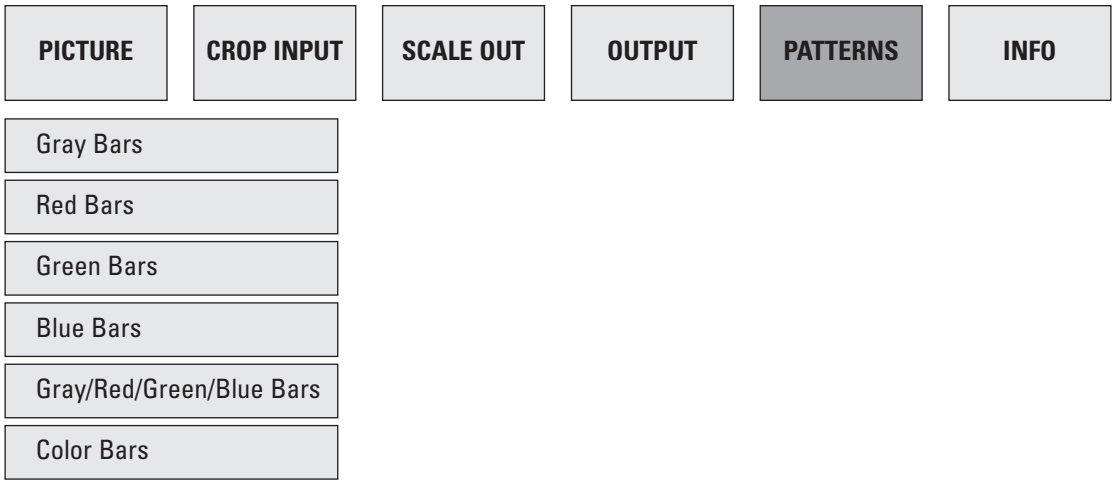


Frame Lock
Synchronizes the output refresh rate to the input (default Off). When Auto is selected, the refresh rate will synchronize, overriding the setting in menu 8, unless the nature of the input prevents this lock. Frame Lock can be useful when the display accepts video-based refresh rates (50 Hz in PAL regions or 60 Hz in NTSC regions) and film-based rates (24, 48, or 72 Hz) thus making motion smoother when watching both types.

To use Frame Lock, set the output in menu 8 to 720p/24 or 1080p/24, or use the Live Video Settings Editor to load 720p/48, 720p/72, or 1080p/48. Set Frame Lock to Auto for all sources that you want to come out at the same frame rate as the input (or better yet program source layers, for example DVD1 and DVD2, such that Frame Lock is active in one layer and off in another – see section 3.5).

When playing a 50 or 60 Hz source that originated from 24 frame-per-second film, turn Frame Lock off (or change source layer) – the output refresh rate will change back to 24/48/72 Hz.

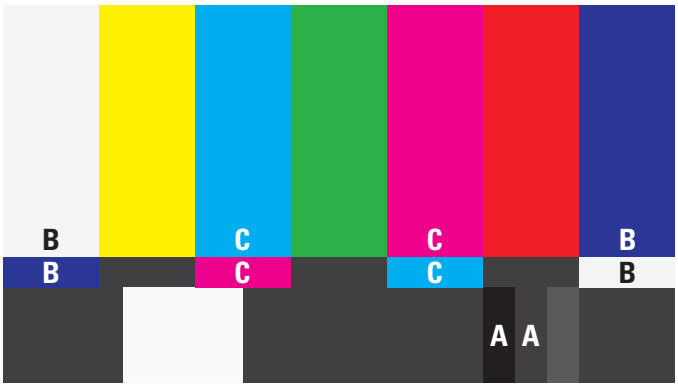
Test patterns from the following menu can be used to adjust the brightness, contrast, and color on your display by eye. Since they are digitally generated, these patterns can be more accurate than those played from a disc (some of which contain errors). Adjustments in previous menus are bypassed.



Gray, Red, Green, Blue bars
Display each test pattern and adjust your display's controls so that you can see 20 evenly spaced vertical bars with each test pattern, all having the same width. Full black level is one step below the darkest bar in the test pattern and full color level is one step beyond the brightest bar.

As always, trust your senses. In brightly lit rooms, the image's brightness may need to be increased to the point that the brightest bars in the test pattern do not appear as separate bars but as one wider bar.

Color bars
This is the SMPTE test pattern:



Increase brightness (black level) on your display so that areas **A** appear as two areas with different brightness, then reduce the level until these areas match each other.

To adjust color (saturation) and tint (phase or hue) a primary blue filter such as those included with test DVDs is required. Looking through the filter, adjust color so that areas **B** match as closely as possible, then adjust tint so that areas **C** match as closely as possible. Note that this method is not as precise as professional calibration – once again, trust your senses if the blue filter does not provide satisfactory results.

The **Info** panel shows Input Status (Video Source, Signal Type, Audio Source, and Film Mode) and Output Status (Signal Type, Frame Rate, Line Rate, and Frame Lock).

Shortcuts: Common settings can be accessed without entering the menu. Press and hold **MODE** until "SCALE OUTPUT" is displayed, then select using the Master Control Knob or the ▲▼ keys on the remote control. Repeatedly pressing MODE before timeout cycles through Crop Input, Frame Lock, and Gamma Correction. To access Brightness, Contrast, Color, and Tint press and hold **DYNAMICS** until the Brightness slider appears, then use the ▲▼ keys to change slider and the ◀▶ keys to adjust.

4.12 **SLEEP TIMER** (Remote Control Only)

If you would like to go sleep while listening to a program or music, the Sleep Timer will automatically turn the AVM 50 power off after the selected amount of time. So when you find yourself falling asleep at the TV, take the Remote Control and:

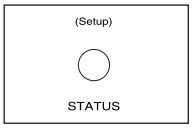
- Select the desired Path (MAIN, ZONE2, or ZONE3), then press **SLEEP** (the Sleep timer will operate for that Path only).
- The first **SLEEP** keystroke always resets the timer to 30 minutes. Additional keystrokes then cycle as follows: Second=60, third=90, fourth=Disabled.
- Once set, the time remaining appears as the number following 'Zzz' in the display.

4.13 **ENABLE / DISABLE TIMERS** (Remote Control Only)

To enable or disable all timers without entering the Setup, press and hold the **SLEEP** key until the display shows 'ALL TIMERS', then use the ▲ ▼ keys to enable/disable (see section 3.1).

4.14 **STATUS DISPLAY**

Press, Release, Press to cycle through display screens that show the following:



- **Software version**, **day**, and **time**.
- **Video Input:** Resolution and refresh rate of video source, and copy-protection status – "**CP**" means copy-protected, "**NP**" means not protected. (See section 2.1.)
- **Audio Input:** Bit rate / sample rate of digital source, or Analog.
- **Input Format:** Channels in the source.
- **Audio Output:** Bit rate / sample rate mode of the digital to analog converters (always 24/192).
- **Output Format:** Channels producing output.
- **Mode:** Surround mode (section 4.8).
- **DD/DTS 5.1 Dynamics:** Normal, Reduced, or Late Night (section 4.8.10).
- **Tone Controls:** Enabled, Bypassed, or N/A (section 4.7).
- **Sleep Mode:** Enabled or Disabled (section 4.12).
- **All Timers:** Enabled or Disabled (sections 3.1 and 4.13).
- **Serial Number:** If the number on the rear panel does not match this, contact Anthem immediately.

When in ZONE2 or ZONE3, information relating only to the selected Path is displayed.

5. **REMOTE CONTROL** CUSTOMIZATION

5.1 ENTERING PRESET MEMORY CODES

Appendix B at the back of this manual contains setup codes for controlling other components in your system with the AVM 50 Remote Control. If a component is not listed, see section 5.2. To enter a code:

1. Press the control mode key at the top (e.g. **DVD**).
2. Press and hold **LEARN** until the LED flashes twice.

3. Enter the **five-digit code** from Appendix B. The LED should blink twice.

5.2 SEARCHING FOR A CODE

If the brand name for your component is not found in Appendix B, the following may help in finding a code:

1. Turn the component on (e.g. the DVD player).
2. Press the matching **control mode** key (e.g. DVD).
3. Press and hold **LEARN** until the LED flashes twice, then press **9**, **9**, **1**.
4. Press **0** for cable converters, satellite receivers, or video accessories, **1** for TVs, **2** for DVD players or VCRs, or **3** for CD players or audio amps/tuners.
5. Aim the remote towards the player, and select a test function, such as **POWER** (or Play).
6. If the player responds, press and release **LEARN** to lock the code. If the player does not respond, press **CH+** to try the next code. CH**–** goes back to the previous code. The codes are sent in order of popularity. **If no code is found, see section 5.4.**

For future reference, record the code as follows: Press and hold **LEARN** until the LED flashes twice, then press **9**, **9**, **0**, **1**. Wait 3 seconds and count the number times that the LED flashes. This represents the first digit (e.g. 3 flashes = 3, no flash = 0) – write this down. Next, press **2** for the second digit, **3** for the third digit, **4** for the fourth digit, **5** for the fifth digit and write down the number of flashes each time.

5.3 VOLUME LOCK

After entering a code for your TV or satellite receiver, you may find it inconvenient to change the control mode back and forth every time you alternate between, for example, changing channels on your TV and adjusting the volume of MAIN on the AVM 50. With Volume Lock engaged, the volume keys adjust MAIN volume, regardless of which control mode is selected, making operation much more convenient.

To <u>engage</u> Volume Lock for MAIN:

1. Press and hold **LEARN** until the LED flashes twice.
2. Press **9**, **9**, **3**.
3. Press **MAIN**.

At this point, the Volume and Mute keys control MAIN only, regardless of control mode setting.

To <u>disengage</u> Volume Lock for ZONE2 (or ZONE3), and re-engage the ZONE2 (or ZONE3) Volume Control**:**

1. Press **ZONE2** (or ZONE3).
2. Press and hold **LEARN** until the LED flashes twice.
3. Press **9**, **9**, **3**.
4. Press **VOL–**.

The Volume and Mute keys now control MAIN for every control mode selection except ZONE2. You may continue to disengage other control modes one at a time. To disengage all, press **VOL+** in step 4.

5.4 LEARNING A COMMAND

The AVM 50 Remote Control has the ability to learn the command of an individual key from almost any other remote control. When a new command is programmed onto a key, the pre-programmed command is still available by pressing LEARN before pressing the key (Layer1).

If the pre-programmed command is used more than the learned command, the learned command can be programmed in Layer2 instead. When a taught key is pressed, the pre-programmed command functions as always, and the learned command is sent by pressing LEARN before pressing the key.

Limitations on learning:

- Multi-frequency codes, some high frequency codes, and other unusual formats are not learnable.
- Control mode keys and LEARN can not be taught. These keys do not send IR commands.
- Depending on the source, the memory typically allows a total of 12 to 26 keys to be taught.
- A multiple keystroke sequence can not be taught to one key.
- Teaching the Record key is not recommended since it almost always requires a double key press (Rec+Pause or Rec+Play) which will be lost in most learning operations.
- The source remote and the AVM 50 remote should be approximately 2 inches apart during teaching mode, and the IR transmitters of the two remotes should be aligned with each other.
- The placement of the IR transmitter in the source remote may make it difficult to correctly align the two remotes.
- Source remotes that contain a beam-focusing lens may require more than one attempt at successful alignment.
- The learning process should be conducted in an area where there is a low level of IR emission. High levels of natural or fluorescent lighting, monitors, and exposed fans could interfere with learning.
- The maximum carrier frequency is 135 kHz.

Teaching a key:

1. Point the source remote and AVM 50 remote at each other to be ready for step 5.
2. Press and hold **LEARN** until the LED flashes twice. One long blink indicates low battery or faulty memory. The remote will not go into learn mode if either of these conditions exist.
3. Press **9**, **7**, **5**, then the desired **control mode** key.
4. To program the command into Layer1, press the **key to be taught**. To program the command into Layer2, press **LEARN** (don't hold), then press the **key to be taught**.
5. The LED flashes rapidly. Within 4 seconds, press and hold the **teaching key on the source remote** until the LED flashes twice. The LED goes out while it receives a signal from the source remote. One long blink means bad capture (try again), memory full (delete another command), or unlearnable code.
6. Repeat steps 4 and 5 as often as desired, up to maximum capacity of memory.
7. To exit, press and hold **LEARN** until the LED flashes twice, or wait 10 seconds.

Deleting learned commands:

1. Press and hold **LEARN** until the LED flashes twice, then press **9**, **7**, **6**.
2. To delete a learned command from one key, press the **control mode** key, then the **key to be deleted** twice. To delete all learned commands in the control mode, press the **control mode** key twice.

5.5 PROGRAMMING MACROS

Macros are used to execute multiple functions with a single key press, such as powering the AVM 50, cable box, and display On at the same time. Up to 32 commands total can be programmed.

Programming a Macro that works regardless of control mode setting:

1. Press and hold **LEARN** until the LED flashes twice.
2. Press **9**, **9**, **5**.
3. Press the key you want to use to activate your macro (e.g. Power).
4. Enter the command sequence that you want the macro to execute.
5. To exit, press and hold **LEARN** until the LED flashes twice, or wait 10 seconds.

To clear the macro, repeat the steps above, but skip step 4.

Programming a Macro that works in only one control mode:

1. Press the control mode key.
2. Press and hold **LEARN** until the LED flashes twice.
3. Press **9**, **7**, **8**.
4. Press the key you want to use to activate your macro (e.g. Power).
5. Enter the command sequence that you want the macro to execute.
6. To exit, press and hold **LEARN** until the LED flashes twice, or wait 10 seconds.

To clear the macro:

1. Press and hold **LEARN** until the LED flashes twice, then release.
2. Press **9**, **7**, **8**.
3. Press the control mode key where you programmed the macro.
4. Press the key that was programmed to activate the macro.
5. To exit, press and hold **LEARN** until the LED flashes twice, or wait 10 seconds.

5.6 RESETTING THE REMOTE TO FACTORY DEFAULTS

Press and hold **LEARN** until the LED flashes twice, then press **9**, **8**, **0**.

If your remote control seems to have stopped working, try resetting it before contacting technical support. As well, make sure the IR sensor wasn't turned off – see section 3.10.

6. SOFTWARE **UPDATING**

The operational characteristics of the AVM 50 are controlled by software that can easily be upgraded via the RS-232 port on the Rear Panel. New software can be downloaded from our web site, and then transferred by connecting the AVM 50 to your computer's serial port and running the Software Installer.

6.1 SOFTWARE VERSION IDENTIFICATION

To find out which software version is in your AVM 50, press **STATUS** and the display will show it. The latest software is available from our web site. A list of changes comes with the download. If operating manual updates aren't also included, or if you haven't been keeping up with the upgrades, it's a major upgrade, so download and use the latest operating manual as well.

6.2 SOFTWARE UPDATING VIA YOUR DEALER

If you do not have a computer or wish to do software updates yourself but still want to have them done, please make arrangements with your dealer. Whether your dealer comes to your theater to do the update, or you bring your AVM 50 to the dealer, the dealer may charge for this service.

6.3 SOFTWARE UPDATING VIA YOUR COMPUTER

To update the Software through your computer, you will need the following:

- Access to the Internet.
- Serial cable (the common kind, which is straight wired, one end DB9 male and the other end DB9 female. A null-modem cable, which looks identical, does not work since pins 2 and 3 are switched).

  Typically, a serial cable up to 100 feet (33 metres) long will work. You may also install the cable permanently to enable easy future updates. When it's not in use, disconnecting it either behind the computer or the AVM 50 is recommended, to prevent the possibility of a ground loop.

Computer System Requirements:

- Win9x, NT, ME, 2000, or XP.
- 1 MB free space on the hard drive.
- Serial port. The Software Installer automatically detects the port being used (COM1 to COM6).

  If your computer does not have a serial port but has a USB port, you will need a USB-to-serial adapter (its driver program must also be installed on your computer). Make sure it's one that's Windows-certified. Some no-name models have been found to cause operation to freeze. Reviving a AVM 50 that was made inoperable by an inadequate USB-to-serial adapter is not covered by the warranty.

Before running the Installer, check your computer's power management settings – particularly if using a laptop – to ensure that the Software Update **does not get interrupted** while running.

Software installation procedure:

1. Find out which Software version you currently have by pressing **STATUS**.
2. Go to the ANTHEM web site (**www.anthemAV.com**) and locate the latest AVM 50 Software version. Proceed only if your version is a lower number, indicating that it is older.
3. Click on the download icon. You will be asked where to save a file called 'avm50v1.zip' – save it to your computer's desktop.
4. Double click on 'avm50v1.zip'. If you computer tells you that the file cannot be opened, you can download a program that can open the file through one of the links on the ANTHEM web site.
5. Drag or extract 'AVM 50 Installer.exe' and 'Read Me First.txt' to desktop. 'Read Me First.txt' lists the latest software changes. You can now delete 'avm50v1.zip'.
6. Ensure that your current AVM 50 Setup configuration is saved (see section 3.12).
7. Turn off all HDMI-connected equipment and **disconnect the AVM 50's power cord** to prevent the possibility of a static discharge when the serial port is connected. Tuner presets, speaker level settings, bass/treble, etc. are automatically written to memory if the line voltage is disconnected or during a power failure.
8. Using the serial cable, connect your computer to the AVM 50 via the RS-232 port on the rear panel. Updating does not require moving the AVM 50 or disconnecting it from your system, as long as you can connect your computer to the RS-232 port.
9. Plug the AVM 50's power cord back in and turn the rear panel switch on.
10. Double click on 'AVM 50 Installer.exe', then click on 'Install Upgrade Now'. In a few minutes, the installation and verification will be completed.

Restore Settings?
You do not need to Restore or Recall any settings after installing new software. The AVM 50 will retain the settings that were in use before the update, except that the day and time will be set according to your computer's day and time settings – if re-adjustment is required, see section 3.1.

Troubleshooting:
If the Installer keeps returning a message that says 'AVM 50 Not Found' after several attempts, restore Factory Defaults in the Setup Menu, try installing again, and reload User Settings once the new software is installed. If that doesn't work, make sure that the serial port on your computer isn't already being used by another application, such a docking station for a personal organizer – you must go into the application that is using it to turn off the serial port.

APPENDIX A – **IR MACROS**

Using the factory remote control's IR codes for MAIN Path, the following 3-key sequences can be programmed into macro-capable aftermarket remotes to create a separate button for each Mode, source, and tuner bank:

For Stereo sources:
MODE, 0, 1 – Stereo
MODE, 0, 2 – AnthemLogic-Music
MODE, 0, 3 – AnthemLogic-Cinema
MODE, 0, 4 – Pro Logic IIx Music
MODE, 0, 5 – Pro Logic IIx Movie
MODE, 0, 6 – Dolby Pro Logic
MODE, 0, 7 – DTS Neo:6 Music
MODE, 0, 8 – DTS Neo:6 Cinema
MODE, 0, 9 – All Channel Stereo
MODE, 1, 0 – All Channel Mono
MODE, 1, 1 – Mono
MODE, 1, 2 – Mono-Academy
MODE, 1 ,3 – Pro Logic IIx Matrix
MODE, 1, 4 – Pro Logic IIx Game
THX, 0, 1 – THX Off
THX, 0, 2 – THX Cinema
THX, 0, 3 – THX Games Mode

For Surround-flagged Dolby Digital 2.0 sources:
MODE, 2, 1 – Stereo
MODE, 2, 2 – AnthemLogic-Music
MODE, 2, 3 – AnthemLogic-Cinema
MODE, 2, 4 – Pro Logic IIx Music
MODE, 2, 5 – Pro Logic IIx Movie
MODE, 2, 6 – Dolby Pro Logic
MODE, 2, 7 – DTS Neo:6 Music
MODE, 2, 8 – DTS Neo:6 Cinema
MODE, 2, 9 – All Channel Stereo
MODE, 3, 0 – All Channel Mono
MODE, 3, 1 – Mono
MODE, 3, 2 – Mono-Academy
MODE, 3 ,3 – Pro Logic IIx Matrix
MODE, 3, 4 – Pro Logic IIx Game
THX, 0, 4 – THX Off
THX, 0, 5 – THX Cinema
THX, 0, 6 – THX Games Mode

Pro Logic IIx Music adjustment:
MODE, 4, 1 – Center Width display
MODE, 4, 2 – Dimension display
MODE, 4, 3 – Panorama Off
MODE, 4, 4 – Panorama On

Neo:6 Music adjustment:
MODE, 4, 5 – Center Image display

THX Re-EQ:
THX, 3, 0 – Re-EQ Off when THX is on
THX, 3, 1 – Re-EQ On when THX is on
THX, 3, 2 – Re-EQ Off when THX is off
THX, 3, 3 – Re-EQ On when THX is off

For Dolby Digital 5.1 sources:
THX, 1, 0 – None
THX, 1, 1 – THX Cinema
THX, 1, 2 – THX Ultra2 Cinema
THX, 1, 3 – THX MusicMode
THX, 1, 4 – THX Surround EX
THX, 1, 5 – THX Games Mode
THX, 1, 6 – PLIIx Movie
THX, 1, 7 – PLIIx Movie+THX Cinema
THX, 1, 8 – PLIIx Music
THX, 1, 9 – Dolby Digital EX
THX, 2, 0 – Neo:6
THX, 2, 1 – Neo:6+THX Cinema

For Dolby Digital Surround EX-flagged sources:
MODE, 5, 1 – None
MODE, 5, 2 – Dolby Digital EX
MODE, 5, 3 – THX Surround EX
MODE, 5, 4 – PLIIx Movie
MODE, 5, 5 – PLIIx Movie+THX Cinema
MODE, 5, 6 – PLIIx Music
MODE, 5, 7 – Neo:6
MODE, 5, 8 – Neo:6+THX Cinema

For 6-Ch sources (analog or HDMI):
MODE, 7, 0 – None
MODE, 7, 1 – THX Cinema
MODE, 7, 2 – THX Ultra2 Cinema
MODE, 7, 3 – THX MusicMode
MODE, 7, 4 – THX Surround EX
MODE, 7, 5 – THX Games Mode
MODE, 7, 6 – PLIIx Movie
MODE, 7, 7 – PLIIx Movie+THX Cinema
MODE, 7, 8 – PLIIx Music
MODE, 7, 9 – Dolby Digital EX
MODE, 8, 0 – Neo:6
MODE, 8, 1 – Neo:6+THX Cinema

For DTS sources:
THX, 4, 0 – None
THX, 4, 1 – THX Cinema
THX, 4, 2 – THX Ultra2 Cinema
THX, 4, 3 – THX MusicMode
THX, 4, 4 – Neo:6+THX Cinema
THX, 4, 5 – THX Games Mode
THX, 4, 6 – PLIIx Movie
THX, 4, 7 – PLIIx Movie+THX Cinema
THX, 4, 8 – PLIIx Music
THX, 4, 9 – Dolby Digital EX
THX, 5, 0 – Neo:6

For DTS-ES sources:
MODE, 6, 1 – None
MODE, 6, 2 – DTS-ES Matrix
MODE, 6, 3 – DTS-ES+THX Cinema
MODE, 6, 4 – PLIIx Movie
MODE, 6, 5 – PLIIx Movie+THX Cinema
MODE, 6, 6 – PLIIx Music
MODE, 6, 7 – Dolby Digital EX

The macros below also work in ZONE2/3/REC.

Tuner Bank Selection:
MODE, 9, 0 – AM
MODE, 9, 1 – FM1
MODE, 9, 2 – FM2
MODE, 9, 3 – FM3

Source Selection:
THX, 8, 0 – CD
THX, 8, 1 – 2-Ch BAL
THX, 8, 2 – 6-Ch S/E
THX, 8, 3 – TAPE
THX, 8, 4 – FM•AM
THX, 8, 5 – DVD1
THX, 8, 6 – DVD2
THX, 8, 7 – DVD3
THX, 8, 8 – DVD4
THX, 8, 9 – TV1
THX, 9, 0 – TV2
THX, 9, 1 – TV3
THX, 9, 2 – TV4
THX, 9, 3 – SAT1
THX, 9, 4 – SAT2
THX, 9, 5 – VCR
THX, 9, 6 – AUX

When using Simulcast mode, all sources must be selected using macros, and within 2 seconds.

Some tips if you're using a macro-capable remote control:

- If you do not want separate Mode selection according to flagged vs. unflagged source material, you can program macros as a 6-key sequence, for example MODE, 0, 1, MODE, 2, 1 and flag will make no difference to selection.
- You can program your source selection keys with the power-on command preceding each source-select command. This way, when a Source is selected, the AVM 50 will turn on at the same time if it is off, similar to Front Panel operation.
- If your source components also have discrete commands for power-on and power-off, you can take the above idea even further, for example, program the TV button with the following sequence: Power-on the AVM 50, select TV Source in the AVM 50, power-on the satellite receiver / cable box, power-on the TV. This way, when the entire system is off and you or a family member wants to watch TV, 'just push TV'.

APPENDIX B – **PRESET MEMORY CODES**

The following codes are for operating other components with the remote control. If codes for one of your components are not in this library, see sections 5.2 and 5.4.

To enter a 5-digit code:

1. Press the control mode key near the top of the remote (e.g. **DVD**).
2. Press and hold **LEARN** until the LED flashes twice.
3. Enter the **5-digit code**. Two LED blinks indicate that the code is accepted.

Anthem Preamplifiers:

D1/2, AVM 20/30/40/50 – MAIN	31185
D1/2, AVM 20/30/40/50 – ZONE2	31186
D1/2, AVM 20/30/40/50 – ZONE3	31187
AVM 2 – MAIN	31096
AVM 2 – ZONE2	31097

Audio Amplifiers:

Accuphase	30382
Acurus	30765
Adcom	31100, 30577
Aiwa	30406
AudioSource	30011
Bel Canto Design	31583
Bose	30674
Carver	30269
Classe	31461, 31462
Curtis Mathes	30300
Denon	30160
Durabrand	31561
GE	30078
Harman/Kardon	30892
JVC	30331
Kenwood	30356
Korsun	31483
Left Coast	30892
Lenoxx	31561
Linn	30269
Logitech	31408
Luxman	30165
Magnavox	30269
Marantz	30892, 30321, 30269
Mark Levinson	31483
Nakamichi	30321
NEC	30264
Optimus	30395, 30300
Panasonic	30521, 30308
Parasound	30246
Philips	30892, 30269
Pioneer	30013, 30300
Polk Audio	30892, 30269
PS Audio	31523
RCA	30300
Realistic	30395
Sansui	30321
Shure	30264
Sony	30689, 30220, 30815
Soundesign	30078, 30211
Technics	30521, 30308
Victor	30331
Wards	30078, 30211, 30013
Yamaha	30354, 30143, 30133, 30504,
YBA	31502

Audio Amp/Tuners:

ADC	30531
Adcom	31616, 30616, 31617
Aiwa	31405, 30158, 30189, 31243, 31089, 31388, 30121, 30405, 31321, 31641, 31347
Akai	30224, 30076, 31512, 31255
Alco	31390
Amphion Media Works	31615, 31563
AMW	31563, 31615
Anam	31609, 31074, 30281
Apex Digital	31430, 31257
Arcam	31120
Audiophase	31387
Audiotronic	31189
Audiovox	31390, 31627
AVLight	30158
Bel Canto Design	31584
Bose	31229, 31253, 30639
Brix	31602
Cambridge Soundwks	31477, 31370
Capetronic	30531
Carver	31189, 30189, 30042, 31089, 30008, 30360
Casio	30195
Clarinette	30195
Classic	31352
Coby	31513, 31389, 31263
Compaq	31136
Criterion	31420
Curtis	31596
Curtis Mathes	30080
Daewoo	31250
Dell	31383
Denon	31360, 30004, 31104, 30771, 31311, 30273, 31142, 30301
Dynamic Bass	30360
Emerson	30424, 30255
Fisher	31409, 30360, 30219, 31801, 30042
Fonmix	31360
Fosgate	31487
Garrard	30424, 30281, 30463, 30146, 30440
Gateway	31517, 31567
GE	31379
Glory Horse	31263
Go Video	31532
GoldStar	30281
GPX	31299
Hafler	30146
Harman/Kardon	30110, 30189, 30891
Hewlett Packard	31181
Hitachi	31801, 31273
Initial	31426
Inkel	30027, 30062, 30502, 30491
Integra	30135, 31298
JBL	30110, 31306, 30281
JVC	30074, 31282, 31263, 31495, 31374
Kansai	30440
Kenwood	31313, 31570, 31569, 30027, 31051, 30077, 30313, 31027, 30042, 30239, 30569, 31052, 30186, 30314
KLH	31412, 31390, 31428
Koss	30424, 30255, 31366
Lasonic	31798, 31510
Lenoxx	31437
Lexicon	31076
Linn	30189
Liquid Video	31497
Lloyd's	30195
LXI	30181
Magnavox	31189, 31269, 30189, 30128, 30391, 30195, 31089, 31514, 30531
Marantz	31189, 31269, 30039, 30189, 31089, 31289, 30200, 30128
MCS	30039, 30346
Memorex	31596
Mitsubishi	31393
Modulaire	30195
Musicmagic	31089
NAD	30320
Nakamichi	30347, 30097, 31555
NEC	30235
Norcent	31389
Onkyo	30135, 31298, 30842, 30380, 31531
Optimus	31023, 30801, 31074, 30080, 30186, 30531, 30797, 30042, 30181, 30440, 30738, 30849, 30177, 30219, 30670
Oritron	31497, 31366
Panasonic	31518, 30039, 31548, 31764, 30518, 31350, 31763, 30367, 31316, 31509, 31633, 30309, 31288, 31363
Penney	30195
Philco	31390
Philips	31189, 31269, 30189, 31365, 31089, 31266, 31283, 30891, 31368, 30391, 31120, 31268
Pioneer	31023, 30150, 30630, 31184, 30080, 30531, 31084, 31384, 30244, 31343
Polaroid	31508
Polk Audio	30189, 31289
Proscan	31254
Qisheng	31609, 31390
Quasar	30039
RadioShack	31263
RCA	31023, 31609, 31254, 30346, 30531, 31154, 31511, 30080, 30530, 31074, 31390, 30054, 30360
Realistic	30195, 30181, 30163
Regent	31437
Rio	31869, 31383
Saba	31519
Samsung	31500, 31295
Sansui	30189, 30346, 30193, 31089
Sanyo	30801, 30360, 31469, 30219, 31251
Scott	30163, 30322
Sharp	31286, 30186, 31386, 31361
Sharper Image	31545, 31556, 30797, 31409, 31416, 31549, 31385, 31411, 31546, 31723, 31263, 31410
Sherwood	30491, 31423, 30062, 31077, 30502, 31653
Shinco	31390
Shinsonic	31426
Silsonic	30176, 31426
Sonic	30281
Sonic Blue	31383, 31869, 31532
Sony	31058, 31441, 31258, 31759, 30158, 31442, 31529, 31758, 31371, 31503, 31042, 31658, 31158, 31858, 31367, 31406, 31458, 30168, 31558, 31131, 31349, 31382
Soundesign	30670
Stereophonics	31023
Sunfire	31313, 30314, 30313, 31052
Tae Kwang	30440
Teac	30163, 31267, 31074, 31528, 30463, 31390
Technics	31308, 31518, 30039, 30518, 30309, 31309, 30208
Techwood	30281
Thorens	31189
Venturer	31390, 30849
Victor	30074
Wards	30158, 30189, 30080, 30054
Yamaha	30176, 30081, 31176, 31375, 30186, 31331, 31276
Yorx	30195
Zenith	31293, 30857, 30281, 31869

APPENDIX B – **PRESET MEMORY CODES** continued ...

Cable Converters:

ABC	00003, 00008, 00014, 00001, 00007, 00013, 00011, 00017
Allegro	00315, 00153
Americast	00899
Antronix	00207, 00022
Archer	00797, 00207, 00153, 00022
Belcor	00056
Bell & Howell	00014
Bell South	00899
Cable Star	00056
Cabletenna	00022
Cableview	00022
Century	00153
Citizen	00315, 00153
Clearmaster	00883
ClearMax	00883
Colour Voice	00025, 00031
Comtronics	00040
Contec	00019
Coolmax	00883
Daeryung	01877, 00877, 00477, 00008
Digi	00637
Director	00476
Dumont	00637
Eastern	00002
Emerson	00797
Everquest	00040, 00015
Focus	00400
Funai	00019
Garrard	00153
GC Electronics	00207, 00056
Gehua	00476
Gemini	00797, 00015
General Instrument	00476, 00810, 00276, 00003, 00014, 00011, 00015
Global	01327
GMI	00015, 00797
GoldStar	00144, 00040
Goodmind	00797
Hamlin	00009, 00273, 00034, 00020, 00259
Hitachi	00014, 00011
Hytex	00007
Jasco	00015, 00315, 00153
Jebsee	00400
Jerrold	00476, 00810, 00276, 00003, 00012, 00014, 00011, 00015
Leon	00015
LG	00144, 00040
Linsay	00440
Magnavox	00027
Memorex	00000
Motorola	00476, 00810, 00276, 01254, 01106, 01376
Movie Time	00156, 00063
MS	00015
MultiVision	00012
Novaplex	00618
NSC	00063, 00156
Oak	00019, 00007
Optimus	00021
Pace	01877, 00237
Panasonic	00000, 00008, 00107, 00040, 00021
Panther	00637
Paragon	00000
Philips	00317, 00027, 00025, 00153, 00013, 00031, 01305
Pioneer	01877, 00877, 00144, 00533, 01021
Popular Mechanics	00400
Pulsar	00000
Quasar	00000
RadioShack	00015, 00883, 00797, 00315
RCA	00021
Realistic	00207
Recoton	00400
Regal	00279, 00273, 00259, 00020
Regency	00002
Rembrandt	00011
Runco	00000
Samsung	00000, 00144, 00040
Scientific Atlanta	01877, 00877, 00477, 00008, 00017
Seam	00510
Signal	00040, 00015
Signature	00011
SL Marx	00040
Sony	01006
Sprucer	00021
Starcom	00003, 00014, 00015
Stargate	00015, 00797, 00040
Starquest	00015
Supercable	00276
Supermax	00883
Sylvania	00001
Tandy	00258
Teleview	00040
Texscan	00001
TFC	00310
Timeless	00040
Tocom	00012, 00013
Torx	00003
Toshiba	00000
Trans PX	00276, 00153, 00315
Tristar	00883
TS	00003
Tusa	00015
TV86	00063
Unika	00207, 00153, 00022
United Artists	00007
Universal	00153, 00056, 00207, 00022, 00191
V2	00883
Viewmaster	00883
Viewstar	00063, 00027, 00258
Vision	00883
Vortex View	00883
Zenith	00000, 00525, 00899
Zentek	00400

CD Players:

ADC	30018
Adcom	30155, 30234
Aiwa	30157, 30124, 30012
Akai	30156
Audio Alchemy	30194
Audio-Technica	30170
BSR	30245, 30194
Burmester	30420
California Audio Labs	30029, 30303
Carrera	30194
Carver	30157, 30437, 30179
Classic	31297
Crown	30122
DAK	30245
DBX	30254
Denon	30873, 30003
DKK	30000
DMX Electronics	30157
Dynamic Bass	30179
Emerson	30305, 30164, 30155, 30469
Fisher	30179, 30174, 31325, 30088, 30342
Garrard	30245, 30420, 30393, 30280, 30425
GE	30009
Gemini	30625
Genexxa	30032, 30305, 30164
GoldStar	30417
GPX	31296
Harman/Kardon	30157, 30173, 31202, 30426
Hitachi	30032, 30155
Inkel	30196, 30180, 30437
Integra	30101
JVC	30072, 31294, 30655
Kenwood	30681, 30826, 30626, 30028, 30037, 30036, 30190
KLH	31318
Kodak	30287
Korsun	31484
Koss	31317
Krell	30157
Kyocera	30018
LG	31208
Linn	30157
Luxman	30093
LXI	30305
Magnavox	30157, 30305
Marantz	30626, 30029, 30157, 30180
Mark Levinson	31484
McIntosh	30287
MCS	30029, 30043
Miro	30000
Mission	30157
MTC	30420, 30625
Nakamichi	30147
NEC	30043, 30234
Nikko	30174, 30170, 30164, 30625
NSM	30157
Onkyo	30868, 30101
Optimus	31063, 30000, 30032, 30037, 30342, 30437, 31075, 30145, 30194, 30305, 30426, 30087, 30179, 30280, 30420, 30468, 30175, 30196
Panasonic	30029, 30752, 30303
Parasound	30420, 30194
Philips	30626, 30157, 30287
Pioneer	31063, 31062, 30032, 30305, 30468, 31087
Polk Audio	30157
Proton	30157
QED	30157
Quad	30157
Quasar	30029
RadioShack	31075
RCA	31062, 30032, 30305, 30764, 30179, 30468, 30009, 30155, 30420, 30053
Realistic	30164, 30180, 30155, 30179, 30175, 30420
Rotel	30157, 30420
SAE	30157
Sansui	30157, 30305, 30202
Sanyo	30179, 30087
SAST	30157
Scott	30305, 30164, 30155
Sears	30305
Sharp	30861, 30037, 30180
Sherwood	31067, 30196, 30180, 30426
Shure	30043
Silsonic	30888, 30036
Sonic Frontiers	**30157**
Sony	30490, 30000, 31364, 30185, 30605, 30100, 30604
Soundesign	30425, 30145
STS	30018
Symphonic	30305
TAG McLaren	30157
Tascam	30420
TDK	31208
Teac	30393, 30180, 30174, 30420
Technics	30029, 30207, 30303
Tivoli Audio	31553
Vector Research	30194, 30417
Victor	30072
Wards	30157, 30053
Yamaha	30888, 30036, 30187, 30170, 31292
YBA	30625
Yorx	30461
Zonda	30157

APPENDIX B – **PRESET MEMORY CODES** continued ...

DVD Players:

Adcom	21094
Advent	21016
Aiwa	20641, 21912
Akai	20899, 20770, 21975, 21089
Allegro	20869
Amphion Media Works	22016, 22001
AMW	20872, 22016, 22001, 21176
Anam	21913
Apex Digital	20672, 20717, 20797, 21020, 21100, 20796, 21004, 21061, 21937, 20794, 20830, 21056, 21915, 20755
Aspire Digital	21168
Audiologic	20736
Audiovox	21071, 21122, 21041, 21121, 21072
Axion	21071, 21072
B & K	20662, 20655
Bel Canto Design	21571
Blaupunkt	20717
Blue Parade	20571
Broksonic	20868, 20695
Cambridge Soundwks	21916
CAVS	21057
Changhong	20627, 21061
CineVision	20876, 20869
Classic	21917
Coby	20778, 21107, 21086, 21923, 20852, 21165
Criterion	22007
Curtis Mathes	21087
CyberHome	21023, 21129, 20816, 21117, 21024
Daewoo	20784, 20869, 20833, 21918, 21172, 20705
Denon	20490, 20634
Dual	21085, 21068
DVD2000	20521
Emerson	20591, 20675, 20821
Enterprise	20591
Fisher	20670, 21919
Funai	20675
Gateway	21077, 21073, 21158
GE	20522, 20815, 20717
Go Video	20744, 20869, 21099, 21970, 20715, 20833, 21075, 21730, 20783, 21044, 21144
GPX	20699, 20769
Greenhill	20717
Harman/Kardon	20582, 20702
Hitachi	20573, 20664, 21919
Hiteker	20672
Initial	20717, 21931
Integra	20627, 21924
Jamo	22003
Jaton	21078
JBL	21926, 20702
Jensen	21016
JVC	20558, 20623, 21940, 21901, 20867
jWin	21051, 21049
Kenwood	20490, 20534, 21063, 20682
KLH	20717, 21939, 21149, 21020
Konka	20720, 20719, 20711, 20721
Koss	20651
Landel	20826
Lasonic	20798, 21173
Lenoxx	21938
LG	20801, 20101
Lite-On	21158, 21058
Loewe	20511
Magnavox	20503, 20675, 21976, 21914, 20821
Malata	21159, 20782
Marantz	20539
Memorex	20695
Microsoft	20522
Mintek	20839, 20717
Mitsubishi	21521, 20521
Momitsu	21082
NEC	20785
Nesa	20717
Next Base	20826
Niro	22024
Norcent	21003, 20872, 21923, 21107
Onkyo	20503, 20627, 21924, 20792, 21985
Oritron	20651, 21980
Panasonic	20490, 21462, 21907, 21910, 21990, 21362, 21762, 21909, 21986, 20632, 21490, 21908, 21925, 22017
Philco	22000
Philips	20503, 20539, 20646, 20885, 20854, 21914
Pioneer	20525, 20571, 20638, 20632, 20631, 21902
Polaroid	21086, 21061, 21998, 21200
Polk Audio	20539
Portland	20770
Prima	21016
Princeton	20674
Proscan	20522
ProVision	20778
Qwestar	20651
RCA	20522, 20571, 20717, 20822, 21193, 21974, 21132, 21965, 21022, 21913
Regent	21938
Rio	20869
Rotel	20623
Rowa	20823
Saba	21977
Sampo	20752, 20698
Samsung	20490, 20573, 20820, 21932, 21075, 20899, 21979
Sansui	20695
Sanyo	20695, 20670, 21967, 20873
Sharp	20630, 20752
Sharper Image	21995, 21117
Sherwood	21043, 20770, 20633, 21077
Shinco	20717
Shinsonic	20533, 20839, 21931
Sigma Designs	20674
Sonic Blue	20869, 21970, 21099
Sony	20533, 21533, 20864, 21033, 21904, 22020, 21903, 21981, 20772, 21934
Sungale	21074
Superscan	20821
SVA	20717, 20860, 21105
Sylvania	20821, 20675
Symphonic	20675
Teac	21984, 20809
Technics	20490
Technosonic	20730
Techwood	20692
Terapin	21031
Theta Digital	20571
Tivo	21996
Toshiba	20503, 21154, 22006, 21045, 21996, 20695, 21988
Tredex	20803, 20800, 20799, 20804
TYT	20705
Urban Concepts	20503
US Logic	20839
V Inc.	21226, 21064
Vocopro	21027
Xbox	20522
Xwave	21001
Yamaha	20490, 20539, 20545
Zenith	20503, 20591, 21906, 20869, 22002

Satellite Receivers:

AlphaStar	00772
Chaparral	00216
Crossdigital	01109
DirecTV	00392, 00566, 00639, 01639, 01142, 00247, 00749, 01749, 00724, 00819, 01856, 01076, 01109, 00099, 01444, 01108, 01392, 01443, 01640, 01442, 01414
Dish Network System	01005, 00775, 01775, 01505, 01170
Dishpro	01005, 00775, 01505, 01775
Echostar	01005, 00775, 01170, 01775, 01505
Expressvu	00775, 01775
Funai	00338
GE	00566
General Instrument	00869
GOI	00775, 01775
Goodmans	01246
Hisense	01535
Hitachi	00819, 01250, 00214, 00491, 00489, 00201
HTS	00775, 01775
Hughes Network Sys	01142, 00749, 01749, 01443, 01442, 01444
I-Lo	01535
JVC	00775, 01170, 00492, 01775
LG	01414, 01226
Magnavox	00724, 00722
Matsushita	00340, 00214, 00500
Memorex	00724
Mitsubishi	00749, 00491
Motorola	00869
NEC	00496, 01270
Next Level	00869
Panasonic	00247, 00701, 00214, 00500, 00340
Paysat	00724
Philips	01142, 00749, 01749, 00724, 01076, 00722, 00099, 01442
Proscan	00392, 00566
Proton	01535
RadioShack	00869
RCA	00392, 00566, 00855, 00143, 01392
Samsung	01276, 01109, 01108
Sanyo	00493, 01219
Sharp	00494
SKY	00856
Sony	00639, 01639, 00294, 01640, 00163
Star Choice	00869
Tivo	01142, 01444, 01443, 01442
Toshiba	00749, 01749, 00790, 00486, 01285
UltimateTV	01392, 01640
Uniden	00724, 00722
US Digital	01535
USDTV	01535
Victor	00492
Voom	00869
Zenith	00856, 01856

TVs:

888	10264
A-Mark	10003
Abex	10032
Addison	11150, 10653, 10092
Admiral	10093, 10463
Advent	10761, 10817, 10815, 11933, 10783, 10842
Adventura	10046
Aiko	10092
Aiwa	11914, 11910
Akai	10812, 10702, 10030, 10672, 11903, 10264
Alaron	10179
Albatron	10843, 10700
Ambassador	10177
America Action	10180
Ampro	10751
Anam	10250, 10180, 10003, 10700, 10161, 10628
Anam National	10250, 10161, 10055, 10650
Anhua	10051
AOC	10451, 10093, 10180, 10060, 10030, 10178, 10019, 10185, 11150, 10018, 10052, 10474, 10003, 10092, 10179
Aolinpike	10264
Apex Digital	10748, 10765, 10767, 11943, 10879
Archer	10003
Audiovox	10451, 10180, 10875, 11952, 10802, 11951, 10092, 10623, 11937, 10003
Axion	11937
Baihe	10264
Baile	10001, 10391
Baohuashi	10264
Baosheng	10817
Beijing	10812, 10391, 10264, 10817, 10001
Belcor	10019
Bell & Howell	10154, 10016
BenQ	11032
Bradford	10180
Brockwood	10019
Broksonic	10236, 10463, 11911, 11938, 10003, 11905, 11935, 11929
Caihong	10817
Cailing	10748
Candle	10030, 10046, 10186, 10056
Carnivale	10030
Carver	10054, 10170
Celebrity	10000
Celera	10765
Changcheng	10051, 10817, 10001, 10391, 10264
Changfei	10817
Changfeng	10817, 10264
Changhai	10817
Changhong	10156, 10765, 10817, 10264, 10783, 10767, 11910
Chengdu	10817
Ching Tai	10003, 10474, 10179, 10092
Chun Yun	10000, 10180, 10161, 10474, 11150, 10092, 10843, 10003, 10179, 10700
Chunfeng	10264
Chung Hsin	10180, 10053, 11150, 10036, 10474
Chunsun	10817
Cinema	10672
Citizen	10060, 10030, 10039, 10280, 10056, 10186, 10046, 10092, 11928
Clairtone	10185
Clarion	10180
Colt	11906
Concerto	10056
Conrowa	10156, 10145, 10264
Contec	10180, 10157, 10185
Craig	10180, 10161
Crosley	10054
Crown	10180, 10039
Curtis Mathes	10047, 10054, 10154, 10451, 10093, 10060, 10702, 10030, 10145, 10166, 10466, 11347, 10039, 10056, 11147, 10016, 11919
CXC	10180
Daewoo	10154, 10451, 10180, 10030, 10178, 11661, 10474, 10003, 10628, 10032, 11150, 10092, 11928, 10627, 10700, 10056, 11909, 10170, 10391, 10623, 10019, 10672, 10039
Daytron	10019
Dayu	10391
Dell	11080
Denon	10145, 10511
Dumont	10017, 10019
Durabrand	10463, 10180, 10178, 10171, 11034, 10003
Dwin	10774, 10720
ECE	10037
Electroband	10000, 10185
Electrohome	10381
Elektra	10017, 11661
Emerson	10154, 10236, 10463, 10180, 10178, 10171, 10280, 10623, 10038, 11911, 11944, 10179, 10019, 11909, 11929, 10185, 10282, 11905, 10039, 11928, 10177
Envision	10030, 10813
Epson	10833, 10840
Ether	10030, 10161, 10003
Feilu	10817
Feiyan	10264
Feiyue	10817
Firstar	10236
Fisher	10154, 10159
Fortress	10093
Fujitsu	10186, 10853, 10179, 10809, 10683
Funai	10180, 10171, 10264, 11904, 10179, 10342
Furi	10145, 10817, 10264
Futuretech	10180
Ganxin	10817
Gateway	11756, 11755
GE	11447, 10047, 11454, 10051, 10451, 10180, 10030, 10178, 10092, 11147, 11919, 10055, 10027, 11917, 10135, 10282, 11347, 10021, 11907, 11922
General	10186
Gibralter	10017, 10030, 10019
Gintai	11150, 10474
Go Video	10886
GoldStar	10154, 10030, 10178, 11926, 10019, 10037, 11910, 10001, 10032, 10056, 11150, 10039
Goodmans	10360
Grunpy	10180, 10179
Haier	11034, 10768
Haiyan	10264, 10817
Hallmark	10178
Hankook	10180, 10030, 10178, 10019, 10056, 10628
Harley Davidson	11904, 10179
Harman/Kardon	10054
Harvard	10180
Havermy	10093
Hello Kitty	10451
Himitsu	10180, 10628
Hisense	10156, 10748, 10145
Hitachi	11256, 10156, 10030, 10178, 11145, 10145, 10038, 11245, 10092, 10027, 10381, 10036, 11150, 10056, 11904, 10151, 10165, 10019, 10186, 10032, 10039, 10157, 10016, 10179, 10474
Hongmei	10093, 11910, 10817, 10264
Hongyan	10817, 10264
Hua Tun	11150
Huafa	10145
Huanghe	10817
Huangshan	10264, 10817
Huanyu	11910, 10817, 10264
Huaqiang	10264
Huari	10145, 10264
Huodateji	10051
Hyundai	10849
Imperial Crown	10001, 10391, 10264
Infinity	10054
Inteq	10017
Janeil	10046
JBL	10054
JCB	10000
Jean	10156, 10051, 10236, 10092, 10179, 10003, 10474
Jensen	10761, 10815, 11933, 10817
Jiahua	10051
Jialicai	10264
Jinfeng	10051, 10817
Jinhai	11910
Jinque	10817, 10264
Jinta	10264, 11910
Jinxing	10054, 10156, 10145, 10264, 10037, 10817
Juhua	10817, 10264
JVC	10053, 10160, 11923, 11253, 10036, 10653
Kaige	10264, 10817
Kangchong	11910
Kangli	10001, 10817, 10391, 10264
Kangyi	10264
Kaypani	10052
KEC	10180
Kenwood	10030, 10019
KLH	10765, 10767
KLL	10037
Kloss	10046, 10024
Kolin	10180, 10053, 11150, 10036, 10474
Kongque	10264, 10817
Konka	10632, 10707, 11940, 10628, 10703, 11939, 10638, 10817
KTV	10180, 10030, 10185, 10039, 10280
Kuaile	10264
Kunlun	10051, 10817, 10264
LG	10060, 10030, 10178, 10056, 10442, 10856, 10001, 10038, 10700, 10019, 10037, 10474, 11178, 10003, 10032, 10006
Lihua	10817
Lloyd's	11904
Loewe	10136
Logik	10016
Longjiang	10264, 10817
Luxman	10056
LXI	10047, 10054, 10154, 10156, 10178
Magnasonic	11928, 11913
Magnavox	11454, 10054, 10030, 10706, 11904, 10020, 11944, 10036, 10179, 10386, 11931, 10096, 10187, 11254, 11913, 10024, 10186
Magnin	11907
Majestic	10016
Marantz	10054, 10030, 10854, 10704, 11154, 10855
Maruman	10627, 10391
Matsushita	10250, 10650, 10161
Megapower	10700
Megatron	10178, 10145, 10003
MEI	10185
Meile	10264, 11910, 10817
Memorex	10154, 10463, 10150, 10178, 10179, 11920, 11927, 10016, 11911, 11926, 11924
Mermaid	10037
MGA	10150, 10030, 10178, 11907, 10019
Midland	10047, 10017, 10051, 10039, 10135, 10032

TVs continued:

Minutz	10021
Mitsubishi	10154, 10250, 10093, 10236, 10180, 11250, 10150, 10030, 10178, 10381, 10836, 10036, 10179, 10817, 11150, 10474, 10019, 10868, 10056, 11917
Monivision	10843, 10700
Motorola	10093, 10055
MTC	10060, 10030, 10185, 10019, 10056
Mudan	10051, 10817, 10264
Multitech	10180
NAD	10156, 10178, 10866
Nanbao	11910, 10264
Nansheng	10817, 10264
National	10051
NEC	10154, 10156, 10051, 10053, 10030, 10178, 10046, 11150, 10056, 10165, 10186, 10474, 10036, 10882, 10381, 10817, 11704, 10170, 10264, 10019, 10497
Newave	10093, 10178, 11150, 10092, 10161
Nikko	10030, 10178, 10092
Nikon	11910
Norcent	10748, 10824
Noshi	10018
NTC	10092
Onking	10280
Onwa	10180
Optimus	10154, 10250, 10166, 11924, 11913, 10650, 11927
Optoma	10887
Optonica	10093, 10165
Orion	10236, 10463, 11911, 11905, 10179, 11463, 11929
Panasonic	10054, 10250, 10051, 10161, 11410, 11927, 11947, 10037, 10055, 10650, 11924, 11946, 11919, 11941
Panda	10051, 10706, 10817, 10264, 11910
Penney	10047, 10156, 10051, 10060, 10030, 10178, 10135, 11347, 11926, 10018, 10027, 10039, 11919, 10003, 10021, 10032, 11907, 10019
Philco	10054, 10180, 10030, 10178, 10628, 10474, 10020, 10037, 10096, 10186, 10774, 10019, 10032, 10056
Philips	11454, 10054, 10000, 10051, 10030, 10178, 10474, 10019, 11154, 10092, 10187, 10774, 10024, 10037, 10056, 10186, 10690, 10020, 10032
Pilot	10030, 10019, 10039
Pioneer	10166, 10038, 10866, 10679
Portland	10092, 10039, 10019
Prima	10761, 10815, 10783, 11933, 10817
Princeton	10717, 10700
Prism	10051
Proscan	11447, 10047, 11347, 11922
Proton	10030, 10178, 10001, 10039, 10466, 10003, 10052, 10474
Pulsar	10017, 10019
Qingdao	10051, 10817, 10264
Quasar	10250, 10051, 11924, 10165, 11919, 10055, 10650
RadioShack	10047, 10154, 10180, 10030, 10178, 10032, 10056, 11920, 10165, 11904, 10019, 10039
RCA	11447, 10047, 11454, 10000, 10030, 10178, 10679, 11247, 11917, 10090, 11948, 11147, 10019, 11907, 11922, 10135, 11958, 11047, 11347, 10018, 11547, 10038, 11919, 10092, 11953
Realistic	10154, 10180, 10030, 10178, 10056, 10019, 10039, 10165, 10032
Rhapsody	10185
Rowa	10748, 10037, 10817
Runco	10017, 10030, 10603, 10497
Ruyi	10817
Saige	10817
Sampo	10154, 10093, 10030, 10178, 10171, 10032, 10052, 10474, 11755, 10039, 10700, 10036, 10092, 10650
Samsung	10154, 10156, 10060, 10812, 10702, 10030, 10178, 10019, 10056, 11060, 10092, 10474, 10774, 10032, 10817, 10090, 11903, 10264, 10766, 10814, 11150, 10179
Samsux	10039
Sanjian	10264
Sansui	10463, 11904, 11929, 11911
Sanyo	10154, 10156, 10180, 10145, 10376, 10474, 10036, 10893, 11907, 10159, 10280, 10424, 10799, 11154, 10157, 10264, 10381, 10798, 10088, 11150
Sanyuan	10093, 10817
Scimitsu	10019
Scotch	10178
Scott	10236, 10180, 10178, 10179, 10019
Sears	10047, 10054, 10154, 10156, 10178, 10171, 11926, 11904, 10056, 10159, 10179
Shancha	10817, 10264
Shanghai	10264, 11910, 10817
Shaofeng	10145, 10817
Sharp	10093, 10030, 10157, 10386, 10650, 10720, 10032, 10851, 10256, 10491, 10689, 10818, 10039, 10165, 10474, 10688, 10787, 10036, 11917
Sharper Image	11950
Shen Ying	10092, 10003, 10474, 10179
Shencai	10145, 10264
Sheng Chia	10093, 10236, 10179, 11150, 10474
Shenyang	10817, 10264
Shogun	10019
Signature	10016
Simpson	10187, 10186
Skygiant	10180
Skyworth	10748, 10264, 10037, 10817
Sony	11100, 10000, 10036, 10650, 11300, 10111, 11925, 10080, 10834, 11904
Soundesign	10180, 10178, 10179, 10186
Sowa	10156, 10051, 10060, 10178, 10036, 10092, 10474, 11150
Spectricon	10003
Squareview	10171
SSS	10180, 10019
Starlite	10180
Studio Experience	10843
Supre-Macy	10046
Supreme	10000
SVA	10748, 10587, 10865, 10872, 10768, 10871, 10870
Sylvania	10054, 10030, 10171, 11931, 10381, 11944, 10020, 10096
Symphonic	10180, 10171, 11913, 11904
Synco	10000, 10451, 10093, 10060, 10178, 10092, 10036, 10474
Tacico	10178, 10179, 11150, 10092, 10474
Tai Yi	11150
Taishan	10817, 10391
Tandy	10093
Tashiko	11150, 10650, 10092
Tatung	10054, 10154, 10156, 10051, 10060, 11150, 10474, 10036, 10055, 11756, 10003
Technics	10250, 10051
Technol Ace	10179
Techview	10847
Techwood	10051, 10003, 10056
Teco	10051, 10093, 10178, 10474, 10036, 10280, 10092, 10264, 10653
Teknika	10054, 10180, 10150, 10060, 10019, 10056, 10186, 10016, 10092, 10039, 10179
Telefunken	10702, 10056
Tera	10030, 10466, 10474
Thomas	11904
Tiane	10093, 10817
TMK	10178, 10177, 10056
TNCi	10017
Tobo	10748, 10264
Tongguang	10264
Toshiba	10154, 11256, 10156, 10060, 10145, 11918, 11945, 10381, 10832, 10036, 11704, 11936, 10264, 10650, 11150, 11656, 11935, 10161, 10509, 10845, 11356
Tosonic	10185
Totevision	10039
Trical	10157
Tuntex	10030, 10474, 10092
TVS	10463
Ultra	10391
Universal	10027
V Inc.	11756, 10885, 10864
Vector Research	10030
Victor	10250, 10053, 10160, 10650, 10376, 10036, 10653
Vidikron	10054
Vidtech	10178, 10019, 10036
Viewsonic	10857, 11755, 10885, 10864
Viking	10046
Wards	10054, 10030, 10178, 10020, 10080, 10165, 10866, 10019, 10027, 10056, 10111, 10179, 10016, 10021, 10096
Warumaia	10391
Waycon	10156
Westinghouse	10889
White Westinghouse	10463, 10186, 11909, 10623
Xiahua	10817, 10264
Xiangyang	10264
Xihu	10817, 10264
Xinghai	10264
Xinrisong	11910
Xuelian	11910
Yamaha	10030, 10838, 10019, 10833, 10769, 10839
Yapshe	10250
Yongbao	11910
Youlanasi	10817
Yousida	11910
Zenith	10017, 10463, 10178, 11911, 10016, 11909, 10092, 11904, 11929
Zonda	10003

VCRs:

ABS	21972
Admiral	20048, 20209
Adventura	20000
Aiko	20278
Aiwa	20037, 20000, 20307, 20468, 20124, 20406, 20348, 20479
Akai	20041, 20061, 20175, 20106
Alienware	21972
America Action	20278
American High	20035
Amoisonic	20479
Anam	20162, 20037, 20240, 20278, 20226, 21037
Anam National	20162, 20226
Asha	20240
Audiovox	20037, 20278
Beaumark	20240
Bell & Howell	20104
Blaupunkt	20226
Broksonic	20184, 20121, 20209, 20002, 20348, 20295, 21479, 20479
Calix	20037
Canon	20035, 21174, 20167
Carver	20081
CCE	20072, 20278
Changhong	20048, 20081
Citizen	20037, 20278, 21278
Colt	20072
Craig	20037, 20047, 20240, 20072, 20271
Curtis Mathes	20060, 20035, 20162, 20041, 20760, 21035
Cybernex	20240
CyberPower	21972
Daewoo	20045, 20104, 20278, 20210, 20368, 21278, 20637, 20046, 20212, 20561
Dell	21972
Denon	20042
DirecTV	20739, 21989, 21954, 21949
Dish Network System	21943, 21946, 21945, 21944
Dishpro	21944, 21943
Durabrand	20039, 20038
Dynatech	20000
Echostar	21943, 21946, 21945, 21944
Electrohome	20037
Electrophonic	20037
Emerex	20032
Emerson	20035, 20037, 20184, 20240, 20045, 20000, 20121, 20043, 20209, 20002, 20278, 20295, 20036, 20637, 21593, 20561, 21479, 20068, 20208, 20479, 21278, 20061, 20212
Euro1	21962
Expressvu	21944
Fisher	20047, 20104, 20066, 20054
Fuji	20035, 20033
Fujitsu	20045, 20052, 20366
Funai	20000, 20593, 21593
Garrard	20000
Gateway	21972
GE	20060, 20035, 20240, 21060, 20202, 20760, 21035, 20807, 20226, 20761
General	20045, 20366, 20052
Go Video	20643, 20526, 20432
GOI	21944
GoldStar	20037, 20209, 20038, 20226, 20225, 21237
Gradiente	20000
Haojie	20240
Harley Davidson	20000
Harman/Kardon	20081, 20038
Harwood	20072, 20068
Hauppauge	21992
Headquarter	20046
Hewlett Packard	21972
HI-Q	20047
Hitachi	20037, 20000, 20042, 20041, 20166, 20105, 20089
Howard Computers	21972
HP	21972
HTS	21944
Hughes Network Sys	20042, 21949, 20739
Hyundai	21951
iBUYPOWER	21972
Jensen	20041
JVC	20045, 20067, 20041, 21945, 20008, 21944, 20384, 20366
KEC	20037, 20278
Kenwood	20067, 20041, 20038, 20384
KLH	20072
Kodak	20035, 20037
Kolin	20043, 20041
LG	20037, 20045, 20042, 20209, 20038, 22010, 21037, 20040
Lloyd's	20000, 20208
Logik	20072
LXI	20037
Magnasonic	21278, 20593
Magnavox	20035, 20039, 20081, 20000, 20593, 20563, 20110, 21781
Magnin	20240
Marantz	20035, 20081, 21381
Marta	20037
Matsushita	20035, 20162, 20226, 21162, 20367, 20227
Media Center PC	21972
MEI	20035
Memorex	20035, 20162, 20037, 20048, 20039, 20047, 20240, 20000, 20104, 20209, 21237, 20046, 20479, 21162, 20348, 21048, 21262, 20307, 21037
MGA	20240, 20043, 20061
MGN Technology	20240
Microsoft	21972
Mind	21972
Minolta	20042, 20105
Mitsubishi	20067, 20043, 20041, 20061, 20807, 20173
Motorola	20035, 20048
MTC	20240, 20000
Multitech	20000, 20072
NAD	20058
National	20226
NEC	20035, 20037, 20048, 20104, 20067, 20041, 20038, 20040, 20008, 20370
Newave	20037
Nikko	20037
Nikon	20253, 20034
Noblex	20240
Northgate	21972
Olympus	20035, 20226, 21046
Onkyo	20222
Optimus	21062, 20162, 20037, 20048, 20104, 21048, 21262, 20593, 21162, 20058, 20432
Optonica	20062
Orion	20184, 20209, 20002, 20479, 20295, 21479
Panarex	21950
Panasonic	21062, 20035, 20162, 20077, 20226, 20616, 21162, 20225, 20367, 20227, 21035, 21262
Pansat	21950
Penney	20035, 20037, 20240, 20042, 20038, 21035, 20040, 20054, 21237
Pentax	20042, 20105
Philco	20035, 20000, 20226, 20479
Philips	20035, 20081, 20000, 20226, 20739, 21381, 20110, 20618, 21181, 20563, 21081, 21949, 20062
Pilot	20037
Pioneer	20042, 20067, 20058
Polk Audio	20081
Profitronic	20240
Proscan	20060, 20760, 21954, 20202, 21060, 20761
Protec	20072
Pulsar	20039
Qisheng	20060
Quarter	20046
Quartz	20046
Quasar	20035, 20162, 21035, 20077, 21162
RadioShack	20000, 21037
Radix	20037
Randex	20037
RCA	20060, 20035, 20240, 20000, 20042, 20807, 21060, 21989, 20106, 20761, 21035, 20058, 21964, 20105, 20226, 20760, 20880, 21954, 20077, 20202, 20453
Realistic	20035, 20037, 20048, 20047, 20000, 20104, 20066, 20046, 20062
ReplayTV	20614, 20616
Ricoh	20253, 20034
Runco	20039
Sampo	20037, 20048
Samsung	20240, 20045, 20212, 20760, 20210, 20432, 21014
Samtron	20643
Sanky	20048, 20039
Sansui	20000, 20067, 20209, 20041, 20479, 20271, 21479
Sanyo	20047, 20240, 20104, 20046, 20159, 20369, 20368
Scott	20184, 20045, 20121, 20043, 20210, 20212
Sears	20035, 20037, 20047, 20000, 20042, 20104, 20046, 20066, 21237, 20054, 20105
Sharp	20048, 20209, 20363, 20848, 20807, 20062, 20738, 21048
Shinco	20000
Shintom	20072
Shogun	20240
Singer	20072
Sonic Blue	20614, 20616
Sony	20035, 20032, 20033, 20000, 20253, 20639, 21232, 21972, 20636, 21032, 21957, 20034, 20586, 20640, 21956
STS	20042
Sunpak	20253
Sylvania	20035, 20081, 20000, 20043, 20110, 21781, 21593, 20593
Symphonic	20000, 21593, 20593
Systemax	21972
Tagar Systems	21972
Tashiko	20037
Tatung	20045, 20067, 20041, 20366, 20008
Teac	20000, 20041
Technics	20035, 20162
Teco	20035, 20037, 20048, 20041, 20038, 20040
Teknika	20035, 20037, 20000, 20052
Thomas	20000
Tivo	20739, 21957, 20636, 21956, 20618, 21503
TMK	20240, 20208, 20036
Toshiba	20045, 20067, 20043, 20041, 20210, 20384, 21008, 21972, 20366, 20845, 21503, 20066, 20212, 20828, 21145, 20008
Totevision	20037, 20240
Touch	21972
UltimateTV	21989
Unitech	20240
Vector	20045
Vector Research	20038, 20040
Victor	20067, 20041, 20008, 20384
Video Concepts	20045, 20040, 20061
Videomagic	20037
Videosonic	20240
Viewsonic	21972

VCRs continued:

Villain	20000
Wards	20060, 20035, 20048, 20047, 20081, 20240, 20000, 20042, 20072, 20062, 20212, 20760
White Westinghouse	20209, 20072, 20637
XR-1000	20035, 20000, 20072
Yamaha	20041, 20038
Zenith	20039, 20033, 20000, 20209, 20034, 20479, 21479, 21139, 20637
ZT Group	21972

Video Accessories:

ABS	01272
Alienware	01272
CyberPower	01272
Gateway	01272
Hewlett Packard	01272, 01267
Howard Computers	01272
HP	01272
iBUYPOWER	01272
InterVideo	01393
Jensen	01165
JVC	01384
Keyspan	01344
KWorld	01403
LG	01415
Linksys	01365
Macro Image Tech	01383
Media Center PC	01272
Microsoft	01272
Mind	01272
Motorola	01363
MyHD	01383
Northgate	01272
Panasonic	01120
Pinnacle Systems	01268
Pioneer	01010
Princeton	00113, 00295
Rabbit	00081
Roku	01486
Samsung	01190, 01490
Sensory Science	01126
Sharp	01010
SMC	01456
Sony	01272, 01324, 01364
Streamzap	01309
Systemax	01272
Tagar Systems	01272
TeleCaption	00171
Toshiba	01272
Touch	01272
Viewsonic	01272, 01329
ZT Group	01272

SPECIFICATIONS

ANALOG VIDEO SWITCHING

Bandwidth from input jack to output jack (bypass mode for component video)

- Composite & S-Video . . . . . 70 MHz
- Component: Y . . . . . 110 MHz
  - Pr . . . . . 90 MHz
  - Pb . . . . . 80 MHz

All analog video inputs and outputs are 75 Ω, 1.5 Vp-p.

ANALOG AUDIO

Input Impedance . . . . . 20 kΩ

Output Impedance

- Main . . . . . 300 Ω (RCA), 600 Ω (XLR)
- Zone2/3 & Record . . . . . 51 Ω

Rated Input . . . . . 2.0 Vrms

Maximum Input . . . . . 5.3 Vrms, 3.0 Vrms for 6-Ch input

Minimum Load . . . . . 5 kΩ

Rated Output (100 kΩ load) . . . . . 2.0 Vrms

Maximum Output

- RCA . . . . . 6.3 Vrms
- XLR . . . . . 12.6 Vrms

Headphone Output . . . . . 100 mW into 32 Ω at 0.2% THD+N

Volume Control Range

- Main . . . . . -95.5 to +31.5 dB in 0.5 dB increments
- Zone2/3 and Headphone . . . . . -62.5 to +10.0 dB in 1.25 dB increments

Crosstalk (at 1 kHz) . . . . . 82 dB between channels, 86 dB between inputs

XLR Pin Configuration . . . . . Pin 1: Ground, Pin 2: Positive, Pin 3: Negative

DIGITAL AUDIO

Crossover

- High-Pass Slope (Small Speaker Setting) . . . . . 12 dB/octave (2nd order)
- Low-Pass Slope (Subwoofer) . . . . . 24 dB/octave (4th order)
- Frequency (Adjustable) . . . . . 25 to 160 Hz in 5 Hz increments

Tone Control

- Filter Type . . . . . Shelf
- Range . . . . . ±12 dB
- Bass Turnover Frequency . . . . . 200 Hz
- Treble Turnover Frequency . . . . . 2 kHz

Analog to Digital Conversion S/N Ratio at digital Rec output (IEC-A Filter) . . . . . 100 dB

All digital inputs and outputs comply with HDMI, S/PDIF, or AES/EBU standards.

MAIN Path (RCA & XLR output)

Frequency Response and **Bandwidth**
- Analog-Direct Inputs . . . . . 10 Hz to 20 kHz (+0, -0.2 dB), 1 Hz to 120 kHz (+0, -3 dB)
- Analog-DSP Inputs at 24/96 . . . . . 10 Hz to 20 kHz (+0, -0.3 dB), 2 Hz to 37 kHz (+0, -3 dB)
- Digital Inputs at 24/96 . . . . . 10 Hz to 20 kHz (+0, -0.2 dB), 1 Hz to 39 kHz (+0, -3 dB)

THD+N (at Rated Input & Output)
- Analog-Direct Inputs . . . . . 0.006% (80 kHz BW)
- Analog-DSP Inputs at 24/48 . . . . . 0.006% (AES17 Filter)
- Digital Inputs at 24/48 . . . . . 0.004% (AES17 Filter)

IMD (CCIF at 15 kHz & 16 kHz)
- Analog-Direct Inputs. 0.001%
- Analog-DSP Inputs at 24/48. . . . . 0.003%
- Digital Inputs at 24/48 . . . . . 0.001%

S/N Ratio (ref. 2.0 Vrms, IEC-A Filter)
- Analog-Direct Inputs. . . . . 106 dB
- Analog-DSP Inputs at 24/48 . . . . . 100 dB
- Digital Inputs at 24/96 . . . . . 104 dB

ZONE2 and **ZONE3** Paths

Frequency Response and **Bandwidth** . . . . . 20 Hz to 20 kHz (+0, -0.1 dB), 3 Hz to 140 kHz (+0, -3 dB)

THD+N (at Rated Input & Output) . . . . . 0.06% (80 kHz BW)

IMD (CCIF at 15 kHz & 16 kHz). 0.06%

S/N Ratio (ref. 2.0 Vrms, IEC-A Filter). . . . . 97 dB

FM TUNER

Sensitivity
- 50 dB S/N. . . . . 13 dBµ typ., 25 dBµ max.
- IHF. . . . . 10 dBµ typ., 20 dBµ max.

S/N Ratio
- Mono . . . . . 75 dB typ., 65 dB min.
- Stereo . . . . . 69 dB typ., 60 dB min.

Distortion
- Mono . . . . . 0.2% typ., 1.0% max.
- Stereo . . . . . 0.3% typ., 1.5% max.

Stereo Separation . . . . . 40 dB typ., 25 dB min.

Adjacent Channel Selectivity (±400 kHz) . . . . . 70 dB typ., 60 dB min.

Frequency Response. . . . . 25 Hz to 15 kHz (+0, -2 dB)

AM TUNER

Sensitivity (20 dB S/N) . . . . . 49 dBµ typ., 56 dBµ max.

S/N Ratio . . . . . 50 dB typ., 43 dB min.

Distortion. . . . . 0.7% typ., 2.0% max.

One Signal Selectivity (±10 kHz) . . . . . 24 dB typ., 18 dB min.

CONTROL

Infra Red

Carrier Frequency. . . . . 38 kHz
Max. 12V Supply Current. . . . . 150 mA
Max. Emitter Current . . . . . 60 mA per output

RS-232 Interface

Connection . . . . . DB-9F, straight-wired
Pinout (AVM 50 side) . . . . . Pin 2: Tx, Pin 3: Rx, Pin 5: Ground
Baud rate 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Configuration. . . . . 8 data bits, 1 stop bit, no parity bits, flow control (RTS/CTS, None)

Trigger Outputs

Polarity . . . . . tip positive, sleeve ground
Max. Current at 12 VDC . . . . . 300 mA between all three triggers
Sequential Delay . . . . . 250 ms

POWER REQUIREMENT

Power Consumption . . . . . Maximum 150 W

DIMENSIONS

Height . . . . . 5 7/8 inches (14.9 cm) including feet, rackmounting – 3 rack units without feet

Width . . . . . 17 1/4 inches (43.8 cm)

Depth . . . . . 14 1/4 inches (36.2 cm)

Weight (unpacked) . . . . . 30.7 lb (14 kg)

Audio measurements were performed with an Audio Precision System Two. Specifications and features are subject to change without notice as design improvements are incorporated.

WARRANTY

CANADA & USA

Anthem Electronics warrants to the original purchaser that each Anthem AVM 50 is free from defects in workmanship and materials, during normal use, for a period starting from the date of sale of three (3) years, except for video circuitry, which is covered for two (2) years, and remote controls which are covered for one (1) year. During the warranty period, Anthem Electronics will repair or replace any defective components free of charge.

This warranty is not transferable unless the product is traded-in with an Authorized Anthem Dealer, who may resell the product with the remaining warranty if it is cosmetically acceptable, in perfect working condition, and has not been internally or externally altered.

Warranty is void if the Anthem product is not purchased from an Authorized Anthem Dealer, if the serial number has been removed, altered, or defaced, if the product has been operated or handled other than in accordance with the instructions in its Operating Manual or otherwise abused, misused, damaged by accident or while in transport, tampered with, modified, or repaired by anyone other than Anthem Electronics or an authorized Anthem Electronics service center. If inspection by Anthem Electronics discloses that the repair required is not covered by this warranty, regular repair charges shall apply.

Display products sold by an Authorized Anthem Dealer are covered under the same warranty terms, except that the warranty period commences from the date of the dealer invoice, not the purchaser's invoice, and cosmetic flaws, if there are any, are excluded.

If a problem or defect is discovered in your Anthem product, please contact your Authorized Anthem Dealer. It is the Dealer's responsibility to determine the nature of the problem and arrange for the appropriate replacement parts, or the return of the product to Anthem Electronics.

A Return Authorization (RA) number must be obtained from Anthem Technical Support before any product can be returned to Anthem Electronics for any reason. The RA Number must be clearly visible on the outside of the shipping carton for Anthem Electronics to accept the return. Product shipped to Anthem Electronics without a RA Number will be refused and returned to the sender, freight collect. Product shipped to Anthem Electronics for repair must have shipping and insurance prepaid by the sender, be packaged in the original carton and packing material, and should be accompanied by a written description of the defect. Anthem Electronics will accept no responsibility for any damage occurring to a product that is shipped in any type of carton and packing material other than the original carton and packing material.

To receive service under warranty, an accompanying copy of the original sales receipt is required. Product repaired under warranty will be returned with shipping and insurance prepaid by Anthem Electronics (within Canada and USA only). All other repairs are subject to charges for labor, parts, return shipping, and insurance.

Disclaimer of Liability

Under no circumstances does Anthem Electronics assume liability or responsibility for injury or damages sustained in the use or operation of Anthem products, or for damages to any other connected products.

In no event shall Anthem Electronics, its agents, representatives, or employees, be responsible for any incidental or consequential damages. Some jurisdictions do not allow limitations of incidental or consequential damages, so this exclusion may not apply to you.

Anthem Electronics reserves the right to make design changes or improvements to products without any obligation to revise prior versions. All specifications are subject to change without notice.

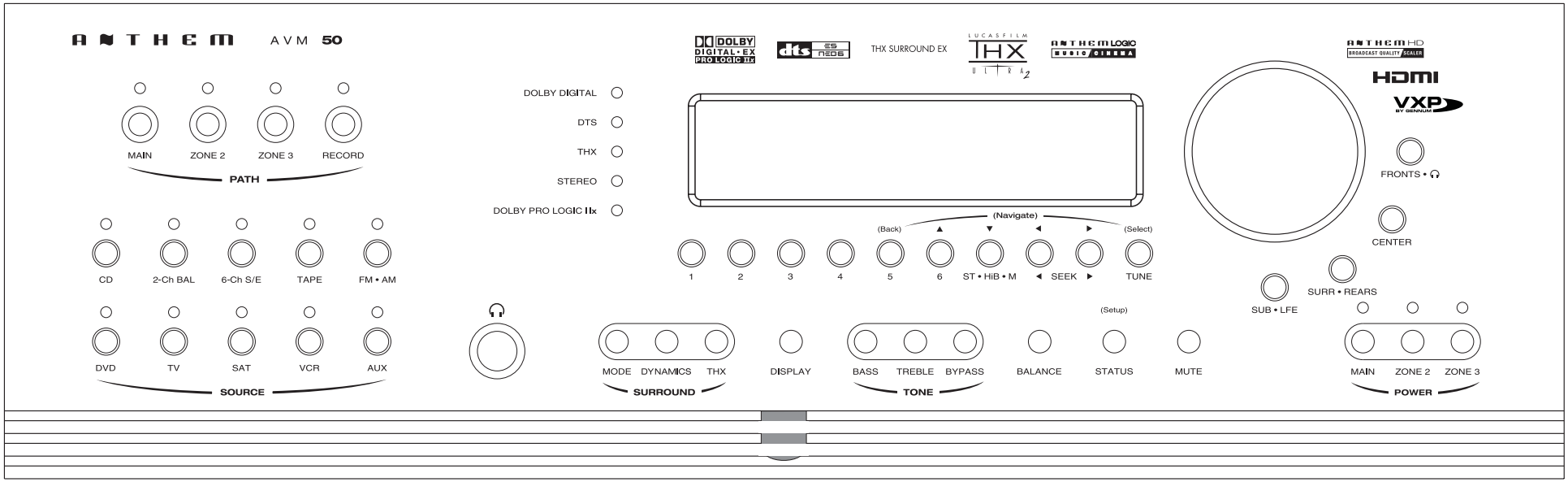
On the expiration of the warranty period all liability of Anthem Electronics in connection with the product shall terminate.

This warranty constitutes the only warranty applicable to products sold by Anthem Electronics. No other warranty or condition, statutory or otherwise, expressed or implied, shall be imposed upon Anthem Electronics, nor shall any representation made by any person, including a representation by a representative or agent of Anthem Electronics, be effective to extend the warranty coverage provided herein.

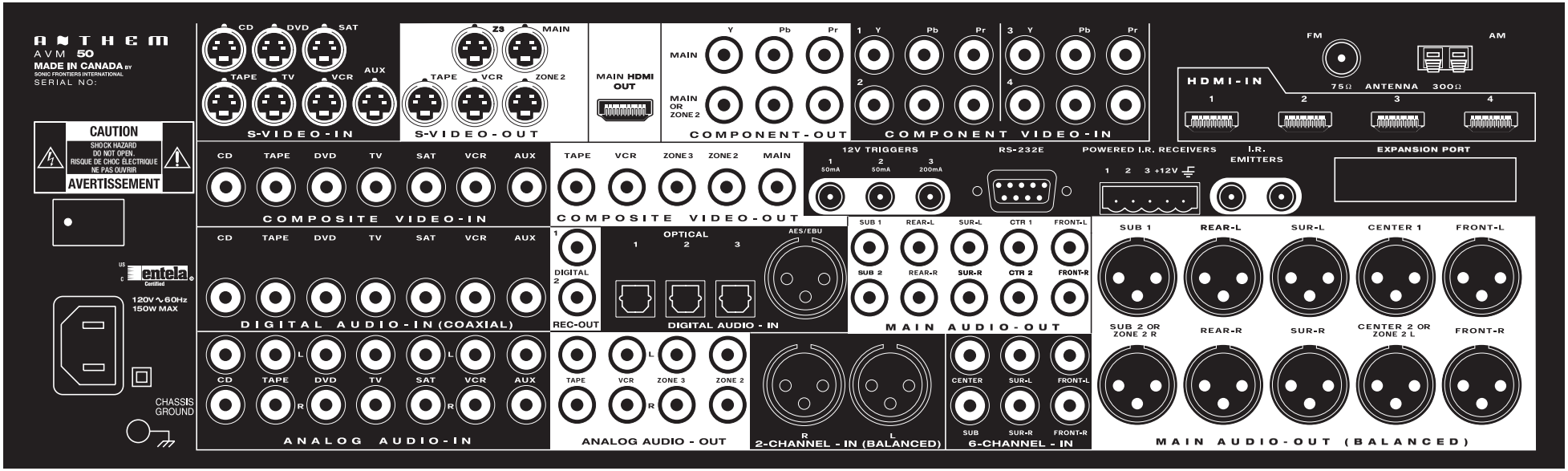
INTERNATIONAL

Outside of Canada and USA, warranty coverage terms are set and maintained by the Authorized Anthem Distributor, not Anthem Electronics. Terms and conditions may vary.

THE BIG PICTURE **FRONT PANEL**



THE BIG PICTURE **REAR PANEL**



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